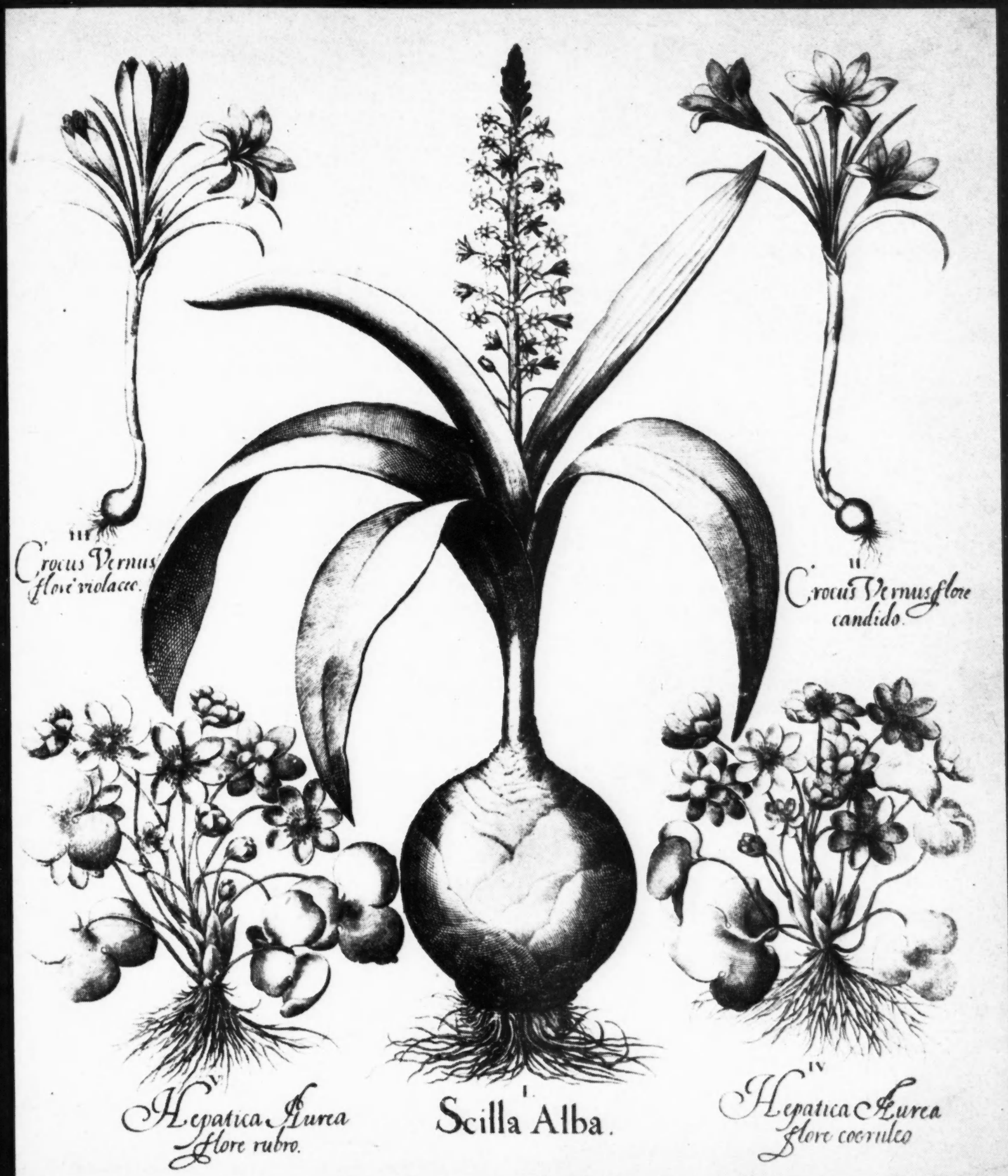
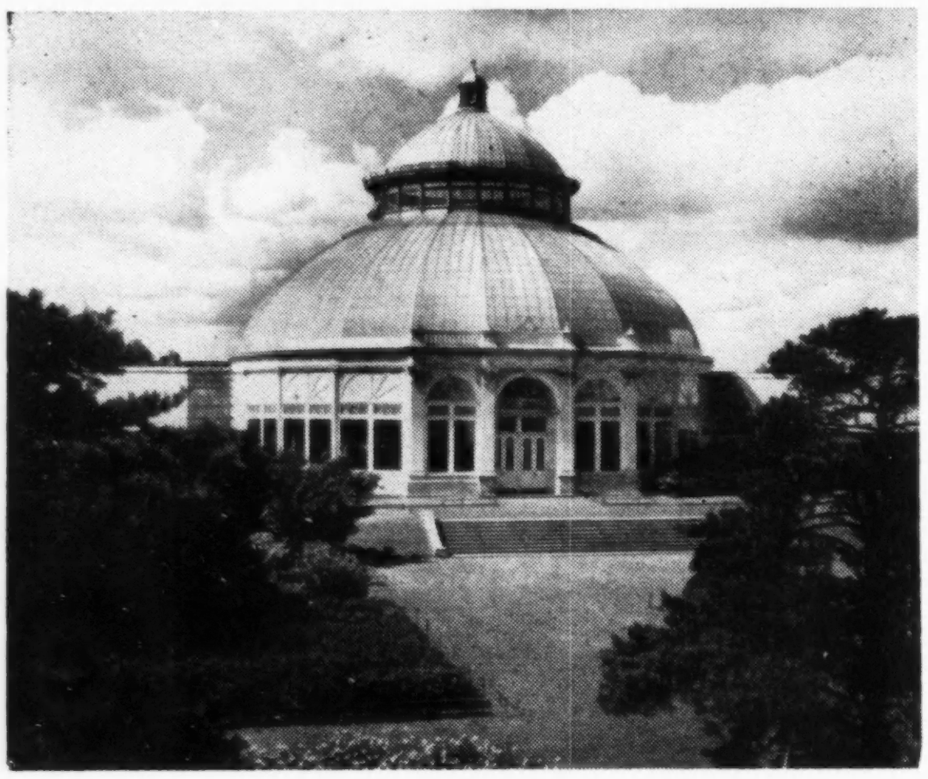


THE GARDEN JOURNAL

OF THE NEW YORK BOTANICAL GARDEN

Vol. 5, No. 2 March-April, 1955



Easter Show in the Conservatory of The New York Botanical Garden, April 1-17.

Pruning Exhibit in the Museum and Administration Building of The New York Botanical Garden, April 1 through summer.

Garden Club Affiliate Day, April 13.

Annual Meeting of The New York Botanical Garden, May 24.

Thirteenth Annual Rose Day at The New York Botanical Garden, in cooperation with the American Rose Society, June 9.

THE GARDEN JOURNAL
of The New York Botanical Garden

DOROTHY EBEL HANSELL
Editor

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AMONG OUR CONTRIBUTORS

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CREDIT FOR ILLUSTRATIONS

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Explore

The New York Botanical Garden

By **Theodore Kazimiroff**

THE SOLITUDE of the snows is broken; the hemlock boughs are released from icy bondage; the buds are unsheathed, the sap is running, the ground thaw is soft underfoot; and the spring growth "candles" or "May—gewachs" (spring growth) turn our forests and fields into a delicate shade of pastel green! Although each season has its own special attraction in our botanical garden, spring is the best by far. The average winter-bound city dweller senses the change, greases up his hiking shoes, and sets out to look for signs of spring. True, upstate forests and marshes hold much to be sought after —but just one Sunday afternoon of crawling, endless hour after hour, bumper to bumper, may soon cure even the most avid botanist or naturalist and tend to restrict him to his urban limits. Though it may not be well known to many, there are more interesting features of natural history to be found within the limits of The New York Botanical Garden than can be visited within fifty miles of travel in New York or New Jersey or Connecticut.

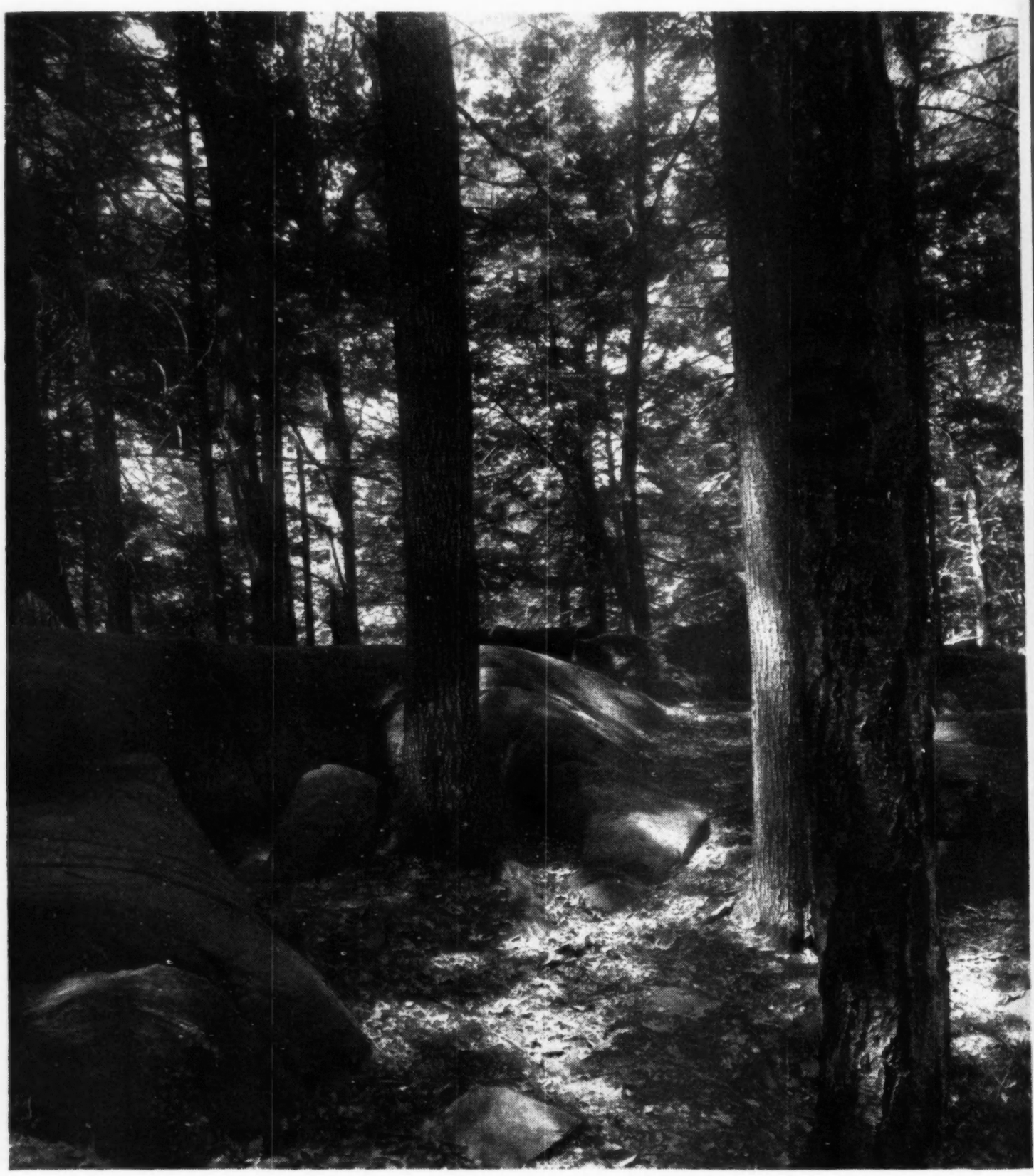
Just a few minutes walk brings us to the only "Forest Primeval" still to be found within the metropolitan area. This spot known to most of us as the Hemlock Grove has very aptly been labeled New York City's "most precious natural possession." Fortunately, while hemlock forests were being ravaged in the post Civil War days for valuable tannic acid (made from hemlock bark), the Lorillard family preserved this virgin wilderness intact.

To appreciate fully the rustic springtime beauty of the Hemlock Grove, wander along the path past Twin-Lakes (south bank), and the beautiful rhododendron and mountain laurel-clad hill where the white, pink, and purple blossoms vie with each other to catch the eye. Do not cross over the new bridge that has replaced the old field-stone bridge (some oldtimers will mourn the loss of this old landmark), but remain on the west bank of the Bronx River (or Aquahunga River as the Algonquin Indians called it, meaning place of high bluffs) and follow the path that wanders uphill. It is marked by a sign that explains the nature of this forest. Directly behind this sign (on your right or west of the path) is a natural rock shelter or cave created by slabs of schist-rock toppled from the overhanging hill by the glacier thousands of years ago. This cave is known as the "Bear's Den," and by this name was described by many Bronx historians including Jenkins in his *Story of the Bronx*. The Indian arrowheads and bits of pottery I have discovered under this overhang offer mute evidence that our predecessors hunted and sought shelter in this very cave before the advent of the early settlers.

Carefully ascending this bluff (above the "Bear's Den") by a mossy, fern-lined path and proceeding forward several hundred feet, the intrepid mountain climber is rewarded by discovering a fantastic example of past glacial action. Here are the Botanical Garden's famous glacial pot-holes! They have been described as Indian wells or bath-tubs, but it is very doubtful whether any Indian ever used them for anything that practical. However, they are a marvelous example of the way melting glacial ice-water carved holes into solid rock, simply by the whirling action of pebbles and gravel trapped in the prehistoric icy torrents. In fact, one of the pot-holes has a gigantic boulder still resting in it where the glacier finally deposited it. At the edge of this eroded cliff, immediately beyond the pot-holes, is a tremendous slab of rock that was forced off the rim of the cliff by the weight of the hundreds of feet of ice that covered all of this area during the ice age (estimates range up to one thousand feet of ice).

The floral display that will reward you depends on the months of spring you choose for this jaunt. As you explore the Hemlock Grove, our native spring flowers may be seen in all their glory; spring-beauties, anemones, violets, Dutchman's breeches, adder's tongue, Solomon's-seal, spikenard, and many others are all to be found pushing their way through the needle-clad, leafy floor of this forest.

Continuing through the Hemlock



Gigantic boulders rest in wooded area of The New York Botanical Garden, where the glacier deposited them thousands of years ago.

Grove, you cannot help but notice a great, rounded pinnacle of rock (Fordham-gneiss, geologically speaking) that towers almost one hundred feet above the path. Several huge oak trees grow directly in front of the steep slopes, adding a particularly beautiful rustic effect that bespeaks similar mountain areas in the Adirondacks. This formation is known locally as the "Lover's Leap" or the "Indian Death Leap"—take your choice. In any event, the ascent is best made on the right or north aspect by a loose rubble-filled path. The view at any time of the year is awe-inspiring, but particularly so on a spring day. One is suddenly at eye level with the crowns of hemlocks, their new growth so green, and with budding oaks, their golden thread-like clusters of blooms dangling tantalizingly close. Perhaps a blue jay cries, or a woodpecker hammers—for sure the chickadees will greet you — and if you are lucky a departing grosbeak may linger long enough to thrill those ornithologically minded. A pause on the crest of this pinnacle will compel even the most jaded urbanite to meditate, and you will proceed on the trail a changed person.

Following any of the paths onward in the same direction, parallel to our rushing river, will soon bring you to our roaring waterfall. Midst milky dogwoods and golden spice-bush, past catkins of birch and willow, and the red of the maple and osier-dogwood, the trail wanders through this forest wonderland, and close to the Lorillard waterfall. I would that I could share the thrill of discovery with all who read. Twenty years ago, while wandering through this area, I stumbled on a secret that I treasure to this day: a patch of Adirondacks transplanted, or better still, a spot of ancestral Bronx untouched for centuries — an area no more than two hundred square feet on an inaccessible spot above the gorge. Trailing arbutus in all its splendor, surrounded by partridge-berry and real honest-to-goodness checkerberry or wintergreen! All ringed in by low-bush blueberries and ferns. As far as I know, only a handful of people are aware of this treasure and each one keeps it intact, even to the extent of clearing grasses and covering the blooms with leaves so that no harm will befall these botanical gems.

Of course, who else would know and love this patch of prized mayflower but our own August C. Pfander, from whom the Hemlock Grove withholds no secrets!

If you can leave the superb view of the Lorillard waterfall as seen from the arch bridge to the north and the famous gorge below and to the south, then continue forward and find a path that leads to the new bridge. And those who haven't should take the "pause that refreshes" at the Old Snuff Mill on the opposite bank of the river. Where else could one partake of a delightful lunch in the midst of a "Forest Primeval?"

Recrossing the river, you leave the Snuff Mill and return by means of the automobile road known to some as Snake Road. The spectacular display that meets the eye at this junction is so unbelievable as to defy description. Azaleas of every shade and hue merge into a kaleidoscope of colors. From snowy white to lavender and coral-pink and flaming red—set in a hillside frame of a "host of dancing daffodils." An artist's canvas of spattered colored oils placed by nature's hand on a green and brown background.

Tearing away from this riot of color will be difficult, but homeward-bound along the auto road heading north, you will observe some other interesting features. Directly on your right, on the east side of the road, rises a hillock of gneiss, topped with a huge glacial boulder, perched precariously on the crest of the rocks—and seemingly defying gravity. Many a small boy has heaved and puffed in a vain attempt to roll this glacial waif from its pedestal. Truly this is the Botanical Garden's counterpart to the New York Zoological Gar-

(Continued on page 58)

THE GREEN GRASS GREW ALL AROUND

By **Robert J. Kessler**

PERHAPS NO SINGLE element of the home landscape picture is more important or more desired than a healthy green lawn.

The upstate New Yorker is blessed with a climate that is conducive to excellent turf. As a rule, very little care is necessary for the upstater to have at all times a lawn of which he can be proud. The writer, for instance, lives on a hillside property with a soil characterized by being too wet and heavy for good tree growth until their roots penetrate the near hard pan conditions several inches below the surface, where less water is encountered and more normal growth results.

Grass, however, is another story. All year round it is a rich luxuriant green and actually is the only plant that really grows beautifully on the soil. True, during the early spring, fall and winter, the lawn is excessively wet from too much moisture; but during the drier weather of summer, there is still enough moisture in the ground to keep the turf a healthy green.

Needless to say grasses are native to New York State — especially upstate New York. The southeastern part of the state, on the other hand, where many of the readers of this article reside, is not as fortunate. The warmer climate there is not as favorable for grasses, and the greater numbers of natural enemies that go along with the warmer climate greatly hinder lawns. It is often a constant war between the home owner and his lawn's natural enemies to maintain the kind of turf he desires.

The two major divisions of turf work are turf construction or new lawns and maintaining the lawn you already have. Along with the second division may also be included maintenance to the point of renovating the poor lawn.

Since to treat all the elements of turf management in one article is impossible without reaching book length proportions, and since this is the time of the year when one is naturally more concerned with maintenance than construction of a new lawn, I shall set down what I feel are the elementary rules for keeping your lawn as healthy and, hence, as green as possible.

Let's assume then that your lawn is already in and you have been growing a mixture of grasses that are most suitable to your locality.

For New York that means a mixture of seed containing Kentucky bluegrass for permanence and excellent growth under sunny conditions, one of the red fescues for shade and drought toleration in sun or shade—therefore a most important grass for southeastern New York. Included also may be one of the bent grasses like Colonial Bent which gives turf a fine texture, can withstand close mowing should that mistake occur, and blends very well with the other grasses in the mixture.

The cheaper seed mixtures will include perennial rye, timothy, and possibly Canada bluegrass and meadow fescue. Although these are useful for pastures and rough areas difficult to mow, the home owner is never satisfied with their stubby, patchy, coarse growth. An exception here is perennial rye which in limited quantity in a mixture acts as a filler grass and germinates quickly, although it is coarser than Kentucky bluegrass, fescue and bent grass.

Clover is found in some seed mixtures, and many desire it for its ability to stay green during hot dry weather and its durability. However, it is not a grass as such, it is coarse in texture, is often spotty in appearance, is slippery—hence an enemy on the athletic field—and causes so-called "grass stains" on children's clothing. Nevertheless, its appearance and its few assets are desired by many home owners. In many upstate sections clover "volunteers," that is, it seeds in naturally. In other areas it is difficult to grow. If you want clover in your established lawn, sprinkle white clover seed at the rate of two ounces to every thousand square feet in late winter when the ground is loosened or honeycombed by frost action. To make the distribution of so small a quantity of seed easier, it can be mixed with soil or sand.

Regular lawn care or maintenance consists of the following main points: mowing, fertilization, and watering.

The average person mows his lawn with often a casual disregard to the height his mower is cutting. True, if the mower is set so that not enough grass is being cut—two inches or more —little or no damage is likely. The trouble arises when the mower is set so that the lawn is getting too close a "haircut"—one and a quarter inches and less. Many a lawn, in other words, is literally ruined by being mowed too closely. However, with a few simple rules as a guide, mowing becomes a relatively simple element in good lawn care.

Set your mower at a height of one and a half inches and leave it that way throughout the year. At this height the lawn will look its best, and at the same time there will be enough top growth for food production so important for good root development and, hence, a solid mat of turf.

Mow your lawn whenever it needs it, or when there is approximately one half inch of growth over the one and a half inch base. Continue mowing in the fall. Some well meaning persons reason that the lawn should be allowed to grow an inch or two over normal height in the fall, feeling subconsciously probably that the extra growth will act as a blanket and afford winter protection. However, this extra growth may mat down during the winter, especially under snow cover, and actually cause a smothering effect which will injure the lawn.

Another approach is to mow often enough so that the clippings will disappear the next day. They are mostly water, anyway. If mowing has been delayed so that the clippings lay in bunches a day after cutting, then raking will be necessary.

The selection of a mower for your lawn boils down basically to one of two choices, the old-fashioned reel type or the newer rotary mower. If your lawn is reasonably good and you have no rough areas of taller grasses, I recommend the reel type. It does a neater job of cutting by its revolving blades which pinch the grass blades against a stationary bed knife. When properly adjusted, it cuts the grass cleanly and doesn't leave brown or ragged tips. The rotary mower, which may be self-propelled or pushed easily along, is a

nice machine for those rough spots you might have. However, it cuts by a high-speed whipping action of its blade whirling in the air, and unless it is kept perfectly sharp at all times, it tears the grass and causes an unsightly singed appearance a day or so after mowing.

Whether you use a gasoline-driven mower or an electric one is up to you, of course. While the electric mower is quiet-running and rarely presents the owner with starting troubles, the length of electric cord sometimes becomes a problem and sometimes gets cut in the bargain, too.

One closing point on mowing—be sure to keep your mower adjusted properly. If you'd rather not check the adjustment yourself by using the instructions that come with your mower, let your repair man do it. Remember you and your mower can not do the job properly with the mower out of adjustment.

The second main point in lawn care is fertilization. At least once a year your lawn should be given a complete fertilizer feeding. Fall is the best time, because lawns are going into active growth again after the summer "doldrums," there is little weed competition for the fertilizer then, and fall rains are supplying needed moisture. However, if you've neglected the fall fertilizer application, you can take care of it in the spring.

The poorer lawn should be fertilized a second time then, anyway.

It makes no difference whether you use a commercial inorganic fertilizer such as a 6-12-6, 10-6-4, 5-10-5, 4-12-4, or what have you, or an organic fertilizer such as activated sludge or processed tankage. The latter are more expensive, slower acting, but less likely to burn the grass. The point I want to make is that it makes no difference basically what type of fertilizer you use —just so the one used is of complete analysis. The typical lawn fertilizer is a 10-6-4 or 9-6-4. Nitrogen, the first number in the analysis, is the most important element for grass growth and the rich green we all like to see.

A simple rule of thumb has been devised for applying fertilizer easily. Merely take the first number in the analysis, which must appear by law on the package, and divide it into a hundred. Apply the answer in pounds of the fertilizer to every thousand square feet of lawn. Thus, if you are using a 5-10-5, twenty pounds of fertilizer will be needed for each one thousand square feet. It's a good idea to water lightly after applying an inorganic type of fertilizer, so that it is washed off the grass blades. The risk of "burning" is thus lessened. Sometimes, you can anticipate a rain just prior to fertilizing and nature will do the job for you.

The importance of fertilizing lawns can not be overemphasized. Whenever a lawn problem is presented to me, the first question I ask is "When did you fertilize your lawn last?" Many lawn problems are traced to lack of any fertilizer program whatsoever. Naturally, there are other things that can be wrong—lack of moisture, disease or insect troubles, poor drainage, crabgrass, not to mention a host of other problems that are encountered in the quest for a green lawn.

Probably no single factor in lawn maintenance is done consistently wrong by so many people as watering. A lawn needs water, but knowing how and when to water is another story. The lawn composed mostly of bluegrass and fescue turns brown in the heat of summer, and often no amount of watering will keep these grasses really green during a hot period. However, recovery is quick and frequently dramatic when cooler weather and accompanying rain arrive. The home owner must accept some browning of these grasses in the summer as perfectly normal.

The biggest mistake in watering is the frequent, light sprinklings that many well meaning, but poorly informed home owners give their lawns during the summer months. It is a pleasant pastime on a hot summer's evening, but a really worthless act. Pleasant in that after ten or fifteen minutes, the sprinkler is refreshed by the sound and feel of the cool water in the air and on his lawn; worthless in that this act every other evening or so actually only results in wetting the top quarter of an inch or so of the soil and encourages root growth near the surface. The shallow root growth is at the mercy of the hot dry days prevalent in summer. I have seen lawns watered this way which were just as dry as they were before the sprinkling by noon the following day. The end result is often the outright killing of these shallow roots — and, subsequently, a ruined lawn. Also, annual grasses and weeds are encouraged because they are naturally shallow rooted. On the other hand, two or three really substantial waterings will often keep a lawn fairly green all summer. The trick is to start when the ground begins to dry out, but before the grass starts to wilt and turn brown.

An accurate way to test for water needs in a lawn is to dig a sample of soil with a trowel to a depth of three or four inches. If the soil is dry, then water to a depth of five or six inches. This means a real soaking, not a sprinkling with a hose and nozzle, and it does take a lot of water to wet down even a small city-size lawn to this depth.

It matters not what time of day a lawn is watered. As long as the watering is timely and deep, your grass cares little what time of day it receives its worthwhile drink.

One other point should be mentioned, especially since this is the time of year it is important, and that is rolling. Rolling is necessary just once a year—early spring. The purpose of this maintenance practice is to press any frost-heaved plants back into the soil. Therefore, it should be done before growth starts. The roller should be just heavy enough to press the plants back in place. Do not roll when the lawn is too wet; when the soil is dry enough to break apart easily in your fingers is the proper time. After the early spring rolling, you can forget about this heavy job for the rest of the year. Repeated rollings are of no value and can be harmful, if your soil is heavy.

Mowing, fertilizing, and watering are the three keys to a good lawn. Naturally, there are other points in good lawn care, such as weed control, insects and disease control, steep slopes and how to handle them, and what can be done with dense shade situations. Readers living in counties outside New York City can obtain help with their lawn problems from their county agricultural agents, who are familiar with local conditions. If you live in New York City, you are welcome to write me describing your problem briefly, but concisely. Include any measures you may have tried to correct it, as well as the conditions under which your lawn is growing. I shall be glad to answer; address me in care of The Garden Journal.

A NEW HYBRID MAGNOLIA

By **Bernard Harkness**

In her article, "Woody Plants Unique and Noteworthy in the Rochester Parks," December 1947 Journal of The New York Botanical Garden, Elisabeth Keiper included "A Score of Slavin's Choice Woody Plants." She described—

> *Magnolia stellata* (BHS 85). *M. stellata* seedling with larger flowers than the parent, petals slightly broader and coming into bloom a week earlier. It may be a hybrid of *M. stellata* and *M. Kobus* or *M. soulangeana.*

We recall this to our readers' attention as we print Mr. Harkness's article in these pages, with permission of "The National Horticultural Magazine." Credit is also due "The National Horticultural Magazine" for the courtesy of allowing us to use the photographs. —EDITOR.

FROM the anise-leaved magnolia, *Magnolia salicifolia,* there have been recorded two other hybrids: *M. Proctoriana* described by Alfred Rehder for the *salicifolia* x *stellata* cross and *M. kewensis* named at Kew Garden for a *Kobus* x *salicifolia* cross. It is the firm belief of Bernard H. Slavin, who has watched the subject plant since its first flowering in 1917, that the seed parent, a plant of *M. salicifolia* in Highland Park, was fertilized by a nearby Soulange magnolia. Several numbered plants of this cross were preserved and have been propagated since. Herbarium specimens of *M. Proctoriana* from the Arnold Arboretum have been examined and, from their narrow petals and smaller leaves, seem clearly to differ from the Rochester plants. No comparative study has been made of *M. kewensis,* also an uncontrolled cross.

The hybrid plant is a rapidly-growing small tree. Its branchlets are glabrous, dull green with red-purple spots sometimes completely coalescing to cover the upper surface. Its flowers in effect suggest *M. Soulangeana.* The

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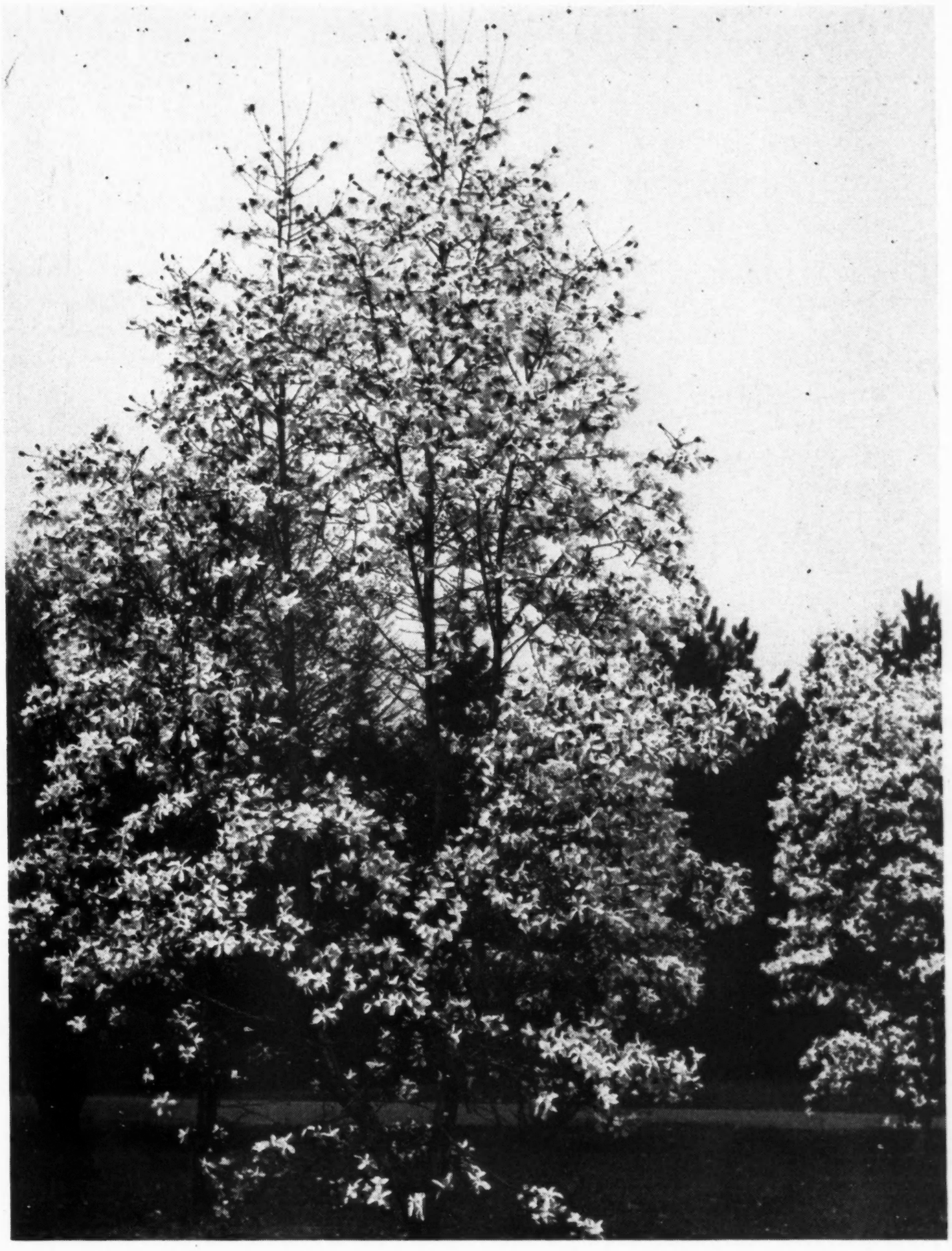
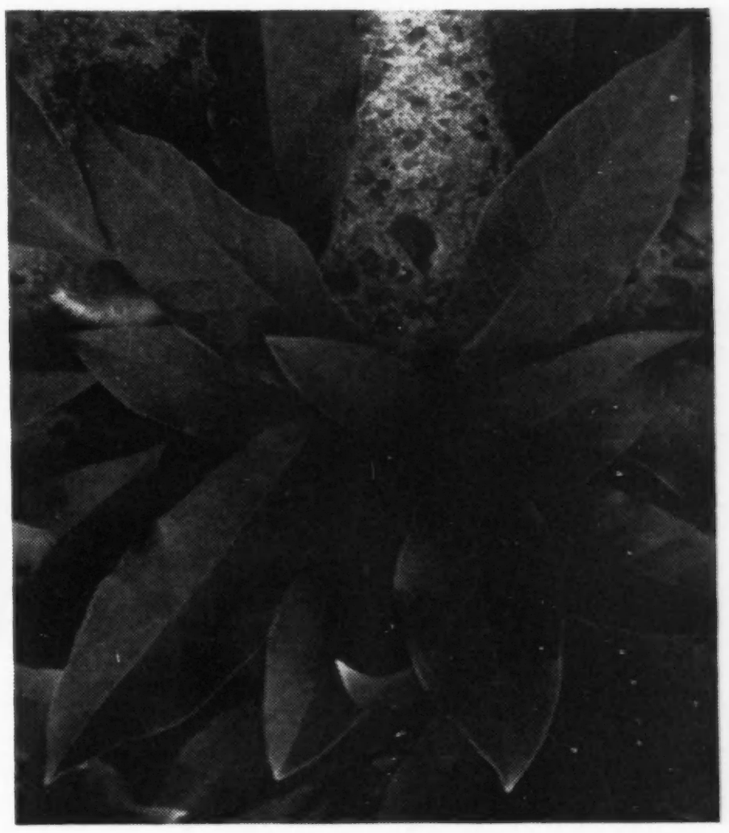




Magnolia Slavinii blooms profusely in April in Durand-Eastman Park. Close-up of its flowers and of its leaves.

Is "Line Breeding" Weakening

OUR MODERN IRIS

By **Wellington F. Scott, Jr.**

GARDENERS WHO ASK, "What is breeding doing to irises?" really mean why is it that the modern tetraploid varieties seem to require more attention than the diploids of grandmother's time. Thirty years ago, the garden varieties were not far removed from species and simple hybrids which had been selected for hardiness through several hundred years. They were vigorous and they were floriferous, else they would not have been retained over so long a time.

It is customary for every older generation to wonder what on earth the younger generation is coming to; but somehow those terrible children always manage to grow up and be a credit to their communities. So do not fret about the things which are happening to our young irises. Rather, stop and think how utterly wonderful they are. Think of the colors and color combinations in the hybrids of today, which were not even dreamed of thirty years ago. There's nothing wrong with this generation of irises. It's a pretty wonderful collection of flowers.

Nevertheless, there is foundation for complaint. There always is some complaint. Thirty years ago, W. R. Dykes wrote of the French, "Many of M. Denis' Ricardi seedlings were magnificent in his garden at Balruc, but they needed the strong soil and hot climate to keep them healthy." And, "If 'Isoline', which clearly shows its trojana parentage, is not a success in every garden, 'Alcazar' does well everywhere, and is an excellent seed parent." The complaints of today largely arise because of the tremendous size of our country and the wide variety of soils and climates found within its borders.

An iris breeder naturally will select those seedlings which grow best and look best *in his garden*. If his growing conditions are typical of large areas, then probably his selections will do well in most areas. If, however, his growing conditions are unique—even slightly so—he may unwittingly select and offer to the iris buying public a seedling which later gains the reputation for being "cranky" in areas which fail to provide some small but important factor which was present in the originator's garden.

That is an evitable price which we must pay for gardening in a country like ours. Certainly, though, it is a small one.

There are a number of ways in which this situation could be corrected, but very probably none of them will be utilized to any great extent. The iris breeder could, after making selections in his own garden, send plants to other areas for testing and await the results of several years of culture in widely scattered areas before offering the plants for sale. The American Iris Society could establish test gardens and require that all new varieties be tested and approved before being eligible for awards. But the plain truth is—the buying public will not hold still for such long delays. When a novelty appears, the iris fanciers want it, will pay big prices for it, and "to the dickens" with any testing.

This puts the expense of testing upon the buying public, and when, as inevitably it will happen, some of these novelties refuse to prosper in certain areas without considerable coddling, the cry goes up, "What's the matter with our new irises?"

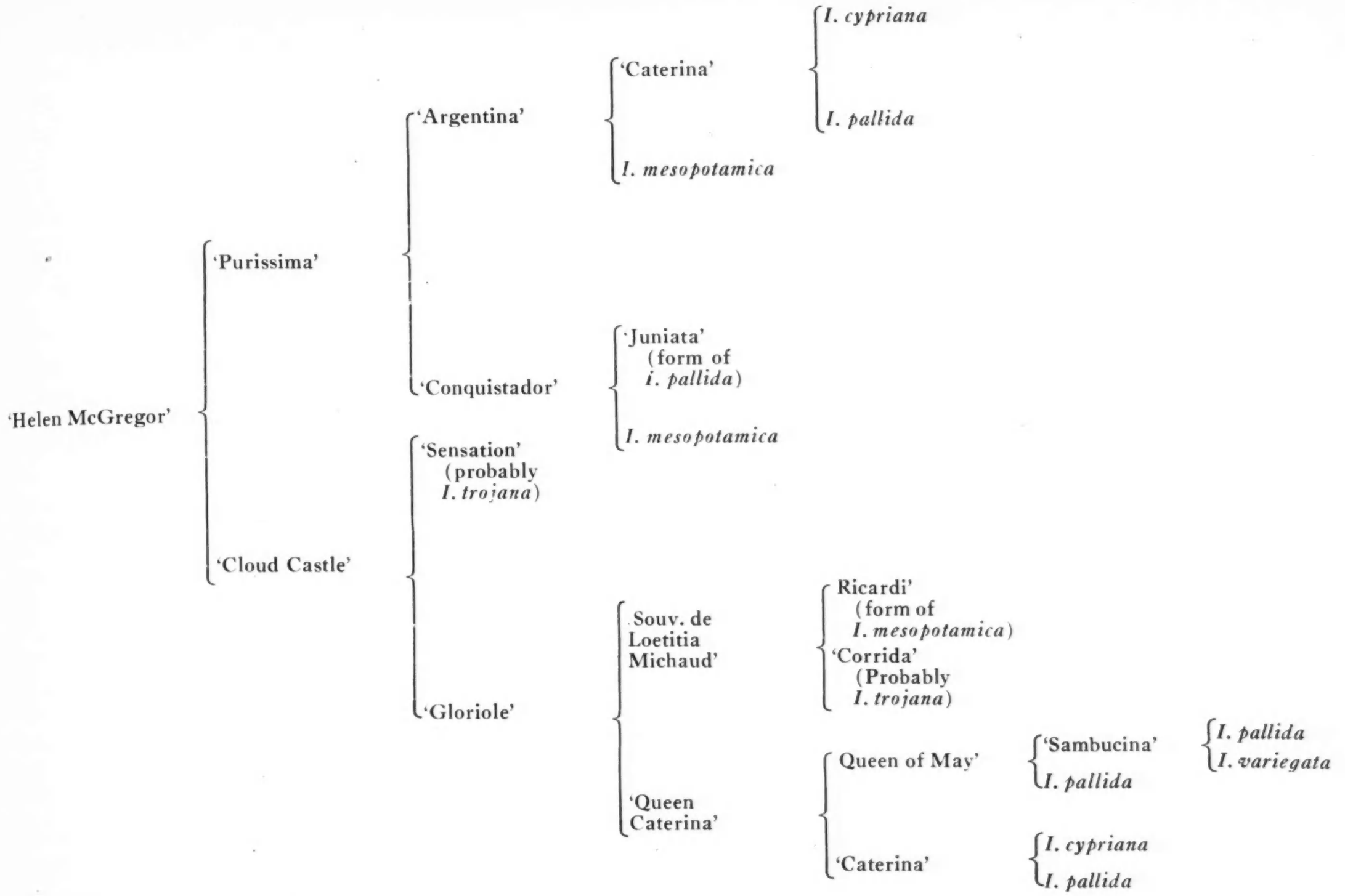
There's nothing the matter with them, really! It is simply a case of complex parentage; the same complex parentage which gives us the size and beauty of our modern hybrids. In my own garden I have found, and expensively I might add, that irises from two breeders rarely will do well. But in other areas I have seen these same varieties behaving beautifully. It would be ridiculous for me to cry out against these two particular breeders, with many seasons of evidence to prove that their varieties do perfectly well in widely separated places. One such iris has won high honors from the American Iris Society, but I scarcely can keep it alive.

Of course, it would be wonderful if all flowers would do perfectly in all soils and climates. Each year I struggle to capture in my garden the beauty of the delphinium and the lupine. With me they practically are annuals—and pretty small ones, too. But in the Northeast I have seen delphiniums eight feet tall and lupines in great masses along old stone walls. Should I cry out against the delphinium and lupine breeders? It would do small good, so I content myself with the reflection that all plants have their limit of culture, and those limits can be stretched only so far.

In 1931, the late Dr. Marion Shull said in his delightful book, *Rainbow Fragments,* that even at that date *I. variegata* and *I. pallida* were responsible for nearly all the standard varieties of irises. Though the large-flowered and well-branched Mediterranean species reached France and England before 1900, hybrids involving them were confined to the gardens of a small number of intensely jealous and, unfortunately, secretive breeders.

To *I. trojana* we owe much of the height and lovely branching of our modern varieties. Our most beautiful blue varieties come from *I. mesopotamica* and *I. cypriana.* Many of our whites can be traced to *I. kashmiriana;* and when you encounter an especially fragrant iris, you probably can find *I. kashmiriana* in its family tree. But for these beautiful qualities there was a price to pay, for these species were native to areas of gentle climates and certain special conditions. Sometimes the price was paid in full at once — the hybrid seedlings perished quickly. Sometimes the debt was concealed by a sturdy offspring, potentially to be collected later, in future progenies.

Thus, with the variety 'Helen McGregor.' Beautiful blue Helen, winner of the Dykes Medal in 1949, does very well in most places. One reason may be that Dr. Graves made his selections in a somewhat rigorous climate. If a seedling did well in his Concord, New



Hampshire, garden, then it very likely would do well most places. But one look at the family tree of 'Helen McGregor' will show that potential trouble is generously distributed through its parentage.

This is no isolated instance, and 'Helen McGregor' has been singled out solely because its family tree is clear-cut, compared to most, and relatively easy to trace. There in Helen's ancestry lie potential tendency to rot, potential weak stalks, and potential poor substance. The breeder who knows this and selects progeny from 'Helen McGregor' with due caution will keep these potential sources of trouble under control; but careless selection could cause a beautiful troublemaker to be named and marketed.

The fear has been expressed that "line breeding" is weakening some of our modern irises; that it is intensifying the weaknesses which exist in the background of practically all our better varieties. This thesis is admirably disproved in the work done by David Hall in improving his pink line. There was a price to pay for those first pink seedlings. It was poor substance, poor branching, and poor growing habits. But in six generations Mr. Hall has, by carefully selecting for good qualities, done quite the opposite to any intensification of weaknesses. He has today many tall, finely-branched pinks of excellent form and substance, all arising from just four pink but inferior seedlings which bloomed in 1942. No other blood has been brought into the line. All seedlings have been from crosses involving just those original four. All of the inferior traits are there, but wise selection has kept them suppressed.

No, I cannot agree that our modern irises are weaklings. They are a bit more exacting than the diploids of 1920, but one look at any of those old ones growing alongside a modern counterpart is sufficient to convert any but the most stubborn of those who long for the "good old days."

Make mine modern!

•

The soft, gray rain comes slowly down,
Settling the mists on marshes brown,
Narrowing the world on wood and hill,
Drifting the fog down vale and rill.
The weed-stalks bend with pearly drops,
The grasses hang their misty tops,
The clean leaves drip with tiny spheres,
The fence rails run with pleasant tears.

Away with care! I walk today
In meadows wet and forests gray;—
'Neath heavy trees with branches low,
'Cross splashy fields where wild things grow,
Past shining reeds in knee-deep tarn
By soaking crops and black-wet barns,
On mossy stones in dripping nooks,
Up rainy pools and brimming brooks

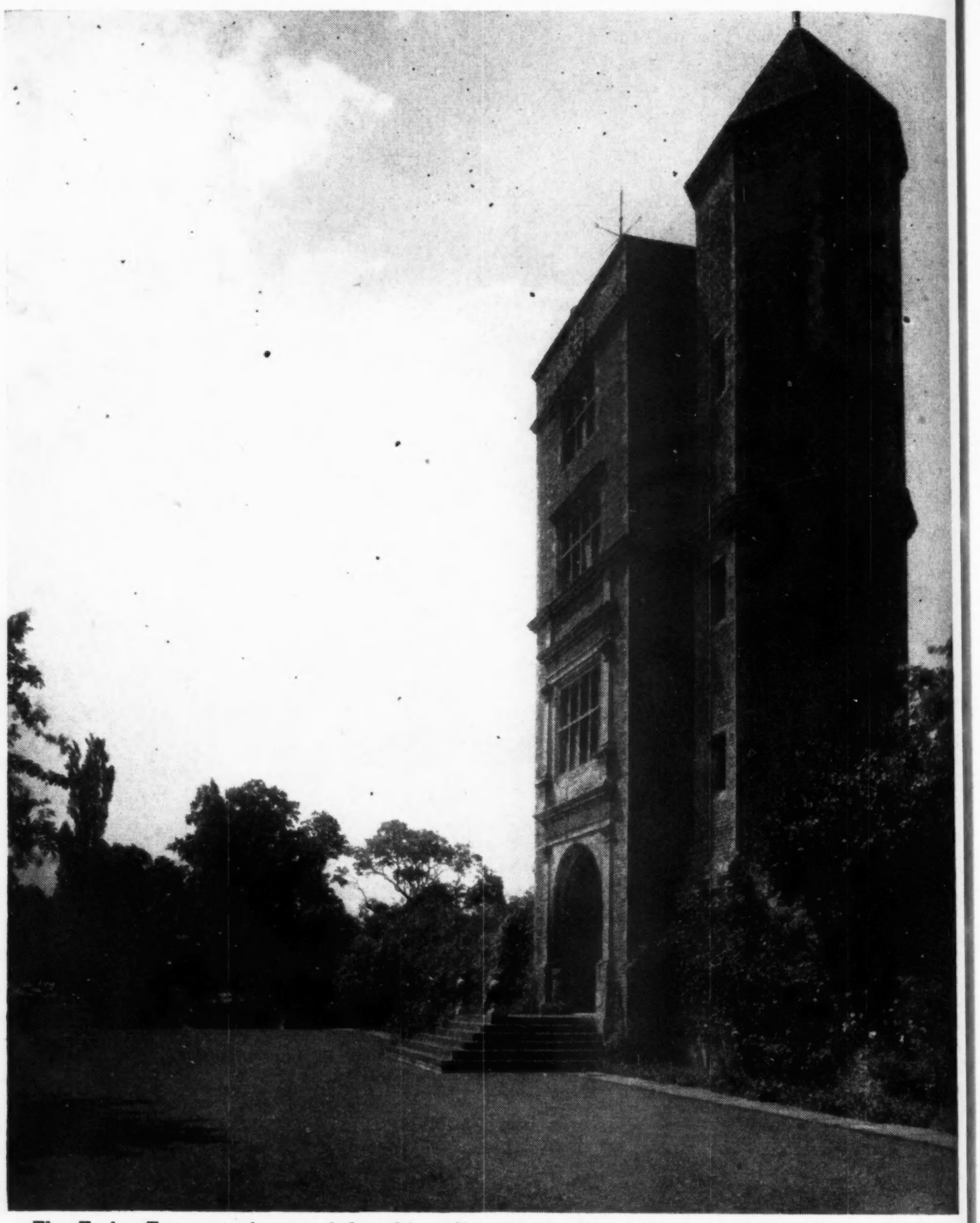
With waterfalls and cascadills
Fed by the new-born grassy rills;—
And thus return across the lots
Through all the soft and watery spots.

Away with care! I walk today
In meadows wet and forests gray.

LIBERTY HYDE BAILEY

The Garden at SISSINGHURST CASTLE Cranbrook, Kent

By V. Sackville-West



The Tudor Tower and part of the old walls with the Tower lawn at Sissinghurst Castle.

Mr. and Mrs. Edwin De T. Bechtel of Bedford Four Corners, Mt. Kisco, N. Y., visited the garden at Sissinghurst Castle in 1952 and were enthralled by all the beauty. They suggested to the Editor that readers of The Garden Journal would enjoy reading about it, if they could not visit it. Acting on their kindly suggestion, we contacted the Hon. V. Sackville-West who sent this story which she had written for the Journal of the Royal Horticultural Society. It is reprinted in these pages with the permission of the Royal Horticultural Society. The Garden is open daily April 1-October 30.
—The Editor.

IT IS EASY TO WRITE an article about somebody else's garden, but it is awkward (in the country phrase) to write about one's own. One hesitates to extol the successes, yet to lay the emphasis on the mistakes and failures would be to assume an apologetic humility which might well irritate the reader into exclaiming "Then why write the article at all?"

I shall, therefore, take the line that it is possible, within twenty years, to create a reasonably presentable garden, acquiring a matured appearance and losing that look of newness which we associate with the narrow orange labels of nurserymen, fluttering from the wrist-slender stems of young trees. I hope that this may be an encouraging theme for those who now stand surveying a new site and wondering how long they must wait before they can accompany their friends without shame along the paths and can look up to, instead of over, the tops of the hedges.

True, the site at Sissinghurst was not a new one; it went back to the reign of Henry VIII. This was an advantage in many ways. It meant that some of the Tudor buildings remained as a background; it meant that some high Tudor walls of pink brick remained as the anatomy of the garden-to-be, and that two stretches of a much older moat remained to provide a black mirror of quiet water in the distance. It meant also that the soil had been cultivated for at least four hundred years, and it was not a bad soil to start with, being in the main what is geologically called Tunbridge Wells sand; a somewhat misleading name, since it was not sandy, but consisted of a top-spit of decently friable loam with a clay bottom, if we were so unwise as to turn up the subsoil two spits deep.

These were the advantages, and I would not denigrate them. But in self-justification I must also draw attention to the disadvantages. The major nuisance was the truly appalling mess of rubbish to be cleared away before we could undertake any planting at all. The place had been in the market for several years since the death of the last owner, a farmer, who naturally had not regarded the surroundings of the old castle as a garden, but merely as a convenient dump for his rusty iron, or as allotments for his labourers, or as runs for their chickens. The amount of old bedsteads, old plough-shares, old cabbage stalks, old broken-down earth closets, old matted wire, and mountains of sardine tins, all muddled up in a tangle of bindweed, nettles, and ground elder, should have sufficed to daunt anybody. Yet the place, when I first saw it on a summer day in 1930, caught instantly at my heart and my imagination. I fell in love; love at first sight. I saw what might be made of it. It was Sleeping Beauty's Castle; but a castle running away into sordidness and squalor; a garden crying out for rescue. It was easy to foresee, even then, what a struggle we should have to redeem it.

It took three years, with the help of

one old man and his son, to clear most of the rubbish away. It is perhaps rather tiresome to grumble retrospectively over troubles long since surmounted, so I will just say that within three years we had got the place into some sort of order and could begin to plant hedges of yew and hornbeam where we wanted them. We planted the yews very small, eighteen inches, and they have now grown so high and thick that visitors to the garden assume them to be several centuries old. I look back, now, with amusement, on those tiny yews when they were first planted in 1933, one by one, separate, a row of little Christmas trees; when, in impatient despair, I could not imagine that ever within my own lifetime they could cohere into a dense thick hedge ten feet above my head. Yet so it is. I cannot see over, and I cannot push through. The new hedges have done well. They have been a success, and that without the help of manure, organic or inorganic.

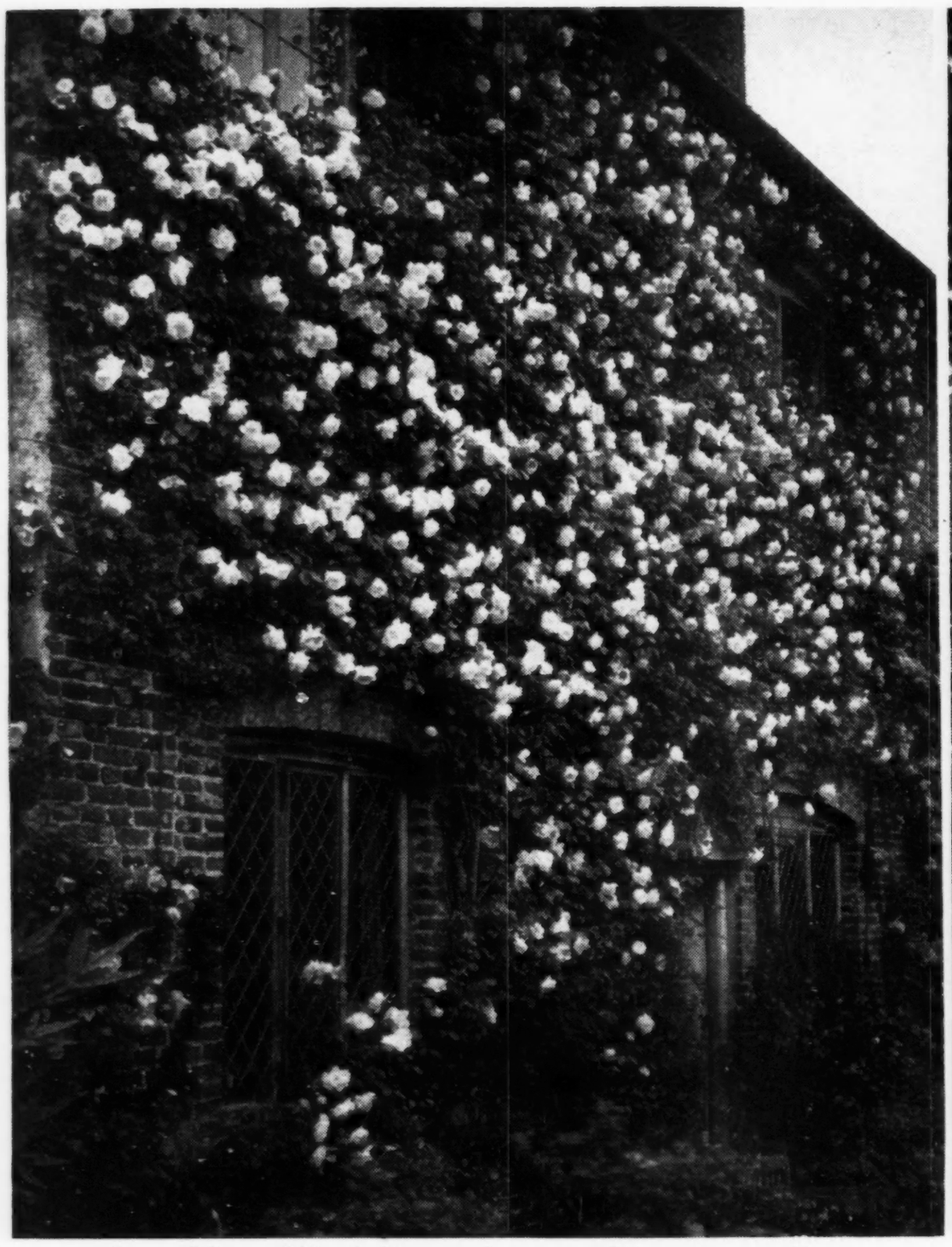
The walls, of course, were a tremendous asset, and more or less determined the shape the garden would have to take. They conveniently broke up the site into separate enclosures . . . but certain difficulties had to be overcome if we wished to create satisfactory vistas and axes. The walls, in short, were not all at right angles to one another; the courtyard was not rectangular but coffin-shaped; the Tower was not opposite the main entrance; the moat walk, with its supporting wall, ran away on so queer a bias that the statue we placed on the bank behind the moat stood opposite both to the Tower and to the seat at the upper end of the moat walk. All this was disconcerting, and there were also minor crookednesses which had somehow to be camouflaged. I do not think that you would notice them from ground level now; though if you ascended the Tower and looked down, you might still give a sympathetic thought to the worried designer, with his immense sheets of ruled paper and his measuring-tapes and his India-rubbers, pushing his fingers through his rumpled hair, trying to get the puzzle to work out.

I could never have done it myself.

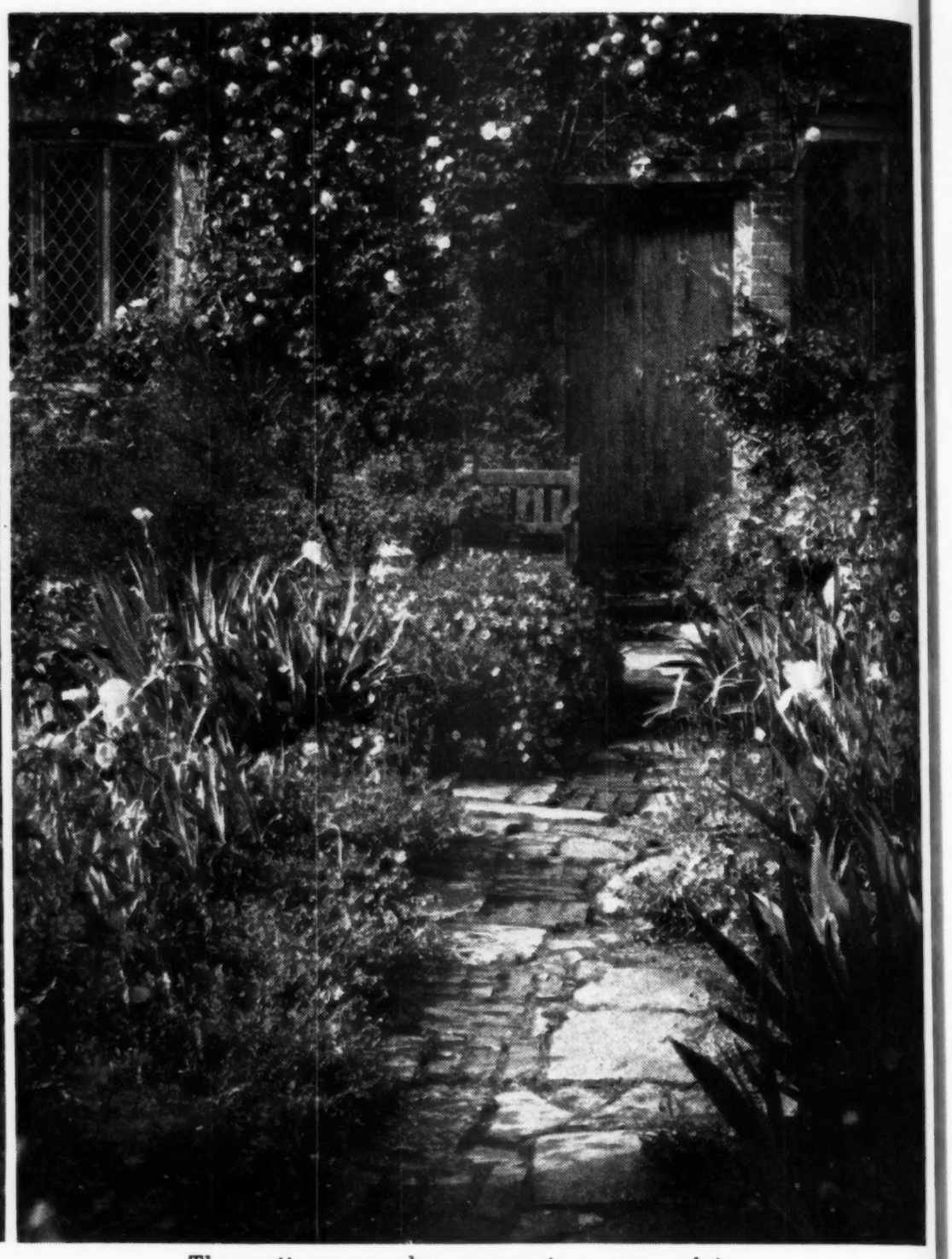
Fortunately, I had acquired, through marriage, the ideal collaborator. Harold Nicolson should have been a garden-architect in another life. He has a natural taste for symmetry, and an ingenuity for forcing focal points or long distance views where everything seemed against him, a capacity I totally lacked. After weeks of paper struggle he would come home to discover that I had stuck some tree or shrub bang in the middle of his projected path or gateway. We did however agree entirely on what was to be the main principle of the garden: a combination of long axial walks, running north and south, east and west, usually with terminal points such as a statue or an archway or a pair of sentinel poplars, and the more intimate surprise of small geometrical gardens opening off them, rather as the rooms of an enormous house would open off the arterial corridors. There should be the strictest formality of design, with the maximum of informality in planting. This is what we aimed at, and is, I hope, what we have achieved.

The place lent itself happily to the informality side of the task. I had the easier job. The rosy walls might not run straight, but they cried out for a tumble of roses and honeysuckle, figs and vines. It was a romantic place, and, within the austerity of Harold Nicolson's straight lines, must be romantically treated. Very English, very Kentish with its distant prospect over woods and cornfields and hop-gardens and the North Downs, and the pointed oast-houses and the great barn, it yet had something foreign about it: a Norman manor-house perhaps; a faint echo of something slightly more southern, something that belonged to the *Contes de*

The red climbing rose 'Allan Chandler' adorns the entrance through Tower Court.



Rose 'Mme. Alfred Carriere' covers the cottage with a mass of blooms.



The cottage garden presents a gay picture in the early months of summer.

Perrault. La Belle au bois dormant—I had been right in my first impression. That was why figs and vines and roses looked so right, so inevitable. I planted them recklessly, and have never regretted it. But I think my deepest stab of pleasure came when I discovered that the country people gave the name of *Rondel* to a circular patch of turf surrounded by one of our yew hedges. There was all poetry, all romance, in that name; it suggested Provence and the troubadours and the Courts of Love; but I think I liked it even better when I realized that they were using it as a term far more Kentishly familiar to them: the name they normally gave to the round floor for drying hops inside one of our Kentish oasts.

Similarly, they called a plantation of nuts (Kent cobs and filberts) the *Nut-plat*. We adopted both names. They may sound affected to outsiders, but they are honestly native and natural and indigenous.

Of course, we made many mistakes. They were mostly due to ignorance. I knew very little about gardening in 1930. If only I had been better informed, I should have planted more flowering shrubs and flowering trees, which by now would have grown to their prime. As it was, I planted all the wrong things and planted them in the wrong places, too close together and unsuitably grouped and ignorantly chosen. If only one could go back twenty years and have it all over again!

It was a disappointment to inherit no plants of any value from an earlier century. We might reasonably have expected an ancient mulberry or two; a cedar; a tulip-tree; a group of ilexes; some venerable yews, possibly with some remains of topiary. There was nothing, except some deteriorating apple trees in the orchard and the nuts in the Nut-plat, which must have been set out in their five little avenues some seventy or eighty years ago. A few vague daffodils and snowdrops appeared in the spring, but that was all. No, I am being ungrateful; we found a rose, a *gallica,* running about like a weed; my friend, Mr. Graham Thomas, to whom I gave a few roots, put it on the market as *gallica* var. 'Sissinghurst Castle,' but it is now thought to be *gallica* 'Tour des Maures.' This was a pleasant thing to find, but I wish there had been something more.

We started at scratch, or worse than scratch, which I suppose means the heavy handicap of weeds. These had enjoyed themselves so exuberantly during years of abandon in a propitious soil, that the moat wall was invisible and the presence of the Nut-plat unsuspected until we began hacking our way through the jungle of brambles and briars which shrouded it. One of the ideas we had decided on from the first was that the garden with all its separate rooms and sub-sections must be a garden of seasonal features throughout the year; it was large enough to afford the space; we could have a spring garden, March to mid-May; and an early summer garden, May-July; and a late summer garden, July-August; and an autumn garden, September-October. Winter must take care

of itself, with a few winter-flowering shrubs and some early bulbs.

I think it may be best if I now describe how we attempted to carry out this scheme.

The Nut-plat was the obvious place for the spring garden. Having noticed that the wild primrose flourished particularly well in the neighbouring woods, I crammed the ground under the nut trees with coloured primroses and polyanthus, on the assumption that where the wild flower will flourish, so also will the cultivated hybrids. This has been a success, not a failure; it really does look like a Persian carpet of many colours for six weeks and more, from early April till the second week in May in the broken light and shade of the nuts. Harold Nicolson had perceived very quickly that this part of the garden should be devoted to the spring, so he ordained a double row of limes, to make a pleached lime walk in years to come. We stuck them into what was then a rough piece of meadow, and left them to grow until we could deal with them, and could eventually make a broad paved path between them, and could under-plant them with a mass of low-growing spring-flowering things, sheets of the blue anemones such as *blanda* and *apennina, Omphalodes Luciliae,* interspersed with large pools of scillas, chionodoxa, various muscari, *Iris pumila, Tulipa dasystemon* and erythronium, the dog-tooth violet. None of these might be very rare or choice, but in the aggregate they made up the effect we wanted to produce: a spring garden suggesting the foreground of Botticelli's Primavera.

The orchard supplemented the spring garden. It became full of bulbs and blossom.

The May-July garden is the Rondel garden, and depends chiefly upon roses of the old-fashioned kind, of which there is now quite a collection. One must resign oneself to their short flowering period and eke them out with other flowering shrubs in the long border under the wall. This in former days would almost automatically have become a herbaceous border, very garish in July and August, and far more pleasing no doubt to the general public, but to my mind the shrubs available today (many of which were, of course, unknown to our grandparents) are more interesting as well as more saving of labour. We have not, however, adhered rigidly to the exclusion of anything but roses and shrubs: there are also many irises, and paeonies in a shady bed; a big group of *Eremurus robustus* against a background of yew; figs and clematis and roses on the wall; some yuccas; and many pansies.

The white-and-grey garden overlaps chronologically: it begins to look well in June, when the little avenue of almond trees down the centre is draped with the lacy white festoons of *Rosa filipes* and the genuine old 'Garland' rose, grown from cuttings taken from a very ancient climber at Knole, and when generous plantings of *Lilium regale* come up through the grey artemisia and silvery *Cineraria maritima;* but it is perhaps at its best a little later on, when the great metallic-looking onopordons have grown up, and clouds of *Gypsophila* 'Bristol Fairy' throw a veil around the pencils of a white veronica, and a few belated white delphiniums and white eremuri persist. It is essentially a garden to sit in on a warm evening, because it looks so cool and unaffected by the long hot day. This bit of the garden is Sissinghurst's youngest child, a post-war child, and it has not yet been taught to do all that is required of it. Still, it promises well.

This brings us up to the end of August, the month which makes us most ashamed of our garden. By the middle of September it starts to recover itself a little, for a final spurt. There is a bright blue rectangular pool of *Gentiana sino-ornata,* which can give nothing but pleasure. Cyclamen come up everywhere. Some autumn trees begin to colour: *Parrotia persica,* liquid-ambar, *Prunus Sargentii,* cercidiphyllum, disanthus and a long bank of azaleas which I forgot to mention as a feature when in flower (and in scent) towards the end of May. The orchard takes on an autumnal beauty, comparable with its spring beauty, as the apples turn red and the leaves of the cherries hang blood red above mauve colchicums.

And then one says to oneself, "There is nothing to look forward to until the witch-hazel and the winter-sweet break into flower and the tiny species crocuses, and the little irises, and spring comes again."

One says also to oneself, "Have I done the best I could by this responsibility which I took on?"

MEET THE LATIN NAMES

By Emily Gibson Latham

WE RUN INTO THE Latin names of plants every day, but how often do we stop for an introduction, or, having gone so far, take the trouble to murmur the great American formula, "Repeat the name," as a token of at least trying to remember it? Common names, we say, are better company, they mean something, they have association and charm. The Latin name spoils all pleasure in a flower. Yet we might be astonished if we were to count up the Latin names we use daily as a matter of course. They have become so completely associated with our flowers that we have practically forgotten the common names they replace. Who calls calendula pot marigold, or heliotrope cherry pie? Calendula and heliotrope no longer sound like Latin names to us, they are homely and pleasant, full of association, and call to mind crisp gold and long-loved perfume. Though we may never have thought of it, they have meaning as well. In fact, many of the common names are translations from the Latin. Since meaning makes everything more interesting, shall we take a look at some of these names and see what's behind them?

We never think of calling *Alyssum* by its common name, madwort. Yet madwort is a free translation from the Greek *a,* not, and *lyssa,* rabies, the name given to the plant in the Dark Ages, when medicine and witchcraft were not far apart, because the plant was supposed to check hydrophobia.

Ageratum has a pleasant and descriptive common name, floss flower, but it is seldom heard. The Latin refers to its qualities as an everlasting or dried flower and is composed of *a,* not, and *geron,* old man or old age, not aging. Perhaps you didn't know *Ageratum* makes a good everlasting — the name could have told you.

Anchusa is derived from *ankousa,* Greek for a red face paint extracted from the root of this plant by resourceful ladies in the days before ready-made cosmetics, and is both the scientific and common name of the plant.

(Continued on page 60)

The Answer To
EFFECTIVE ROSE FEEDING

By **Allen D. Albert, Jr.**

"SOUTHERN GARDENERS," said a national horticulturist lately, "are raised on fertilizer," by which he meant we take it for granted that we have to feed our red clays or sands to have gardens or lawns. Often, more favored soils are allowed to go their own sweet way and—it just won't work.

My own experience has been primarily with roses and, in the years I have grown them, I have discovered that there is no soil which will *remain* rich enough to continue to produce beautiful bloom, at least in profusion. The splendid vigor grown into plants purchased bare-root from a good nursery or potted into that type will produce one gorgeous display, sometimes two. After that the bloom depends upon the feeding and, above all, the water given the plant.

Any discussion of fertilizer should begin with water; beyond the water needs of the plant is the fact that moisture provides the conditions under which bacterial action can proceed and the vehicle by which the plant food goes to the plant. The directions on every plant food in the world begin with instructions to water before fertilizing and to water in well afterwards, inevitably the latter. Such instruction should be carefully followed. I have seen plants dreadfully burned by neglecting both parts of such procedure.

In my own garden, I do not regard anything less than a cloudburst as producing adequate moisture where rainfall and roses are concerned. A round, two-foot in diameter, single bush rosebed contains approximately three square feet of soil into which the essential moisture must fall. An inch of rain—a whole lot of rain, you'll agree—will furnish this bush slightly under two gallons of water *if* it all sticks, doesn't flood off, and penetrates easily.

Considerable experimentation has shown that a rose needs a *minimum* of five gallons of water a week and, in hot, dry weather, often as much as five times that much. The usual hose will produce about five gallons a minute when flowing free on a flower bed, the way I use it, so this is no small amount of time that must be allowed for properly watering a garden.

Thus, without adequate moisture, fertilizer may do little good if any and possibly may be fatal.

In addition to moisture, there are other essential factors in the use of fertilizer. Indeed, water itself may be the cause of one of the most common bars to effective plant feeding. City water is usually, by design, definitely on the alkaline side, while most plants do best if the soil is neutral or mildly acid. This is true of roses and a great number of other plants in addition to the "acid-loving" azaleas, gardenias, camellias, rhododendrons, and others. Continuous watering with the hose may set up an alkalinity that blocks off proper feeding. To understand why this is so, a modicum of understanding as to fertilizer action is helpful.

Advertising has made it abundantly familiar to every gardener that the dozen or so "trace elements" are necessary for healthful plant growth. My fertilizer manufacturing friends tell me that it is so difficult to manufacture really pure ingredients that it is rare for the trace elements *not* to be present. That they are present, however, does not in any sense guarantee that they will be absorbed into the plant. If a specific one of these is not usable but is "blocked" off by too alkaline a soil condition, the three major fertilizing elements — nitrogen, phosphate, and potash—will likewise lose a large part of, if not all, their value. This all-important trace element is iron. If iron is blocked off, the necessary chemical action making the others available to the plant will not take place.

Gardeners, especially those specializing in the "acid-lovers," have long been on the look-out for such unfavorable conditions called "chlorosis." The signs are unmistakable—leaves very pale in color, even yellow, with the veins in contrasting green. In time, sometimes overnight, a large proportion of the leaves turn yellow, often from the top down and at the extremity of the branches or canes.

The answer to such chlorosis has been the feeding of iron directly to the plant in the form of an iron-sulphate solution. Such feeding may be by either of two methods, or both—spraying or pouring around the plant. I mix a tablespoonful of iron-sulphate, also called "copperas," in two gallons of water and put a pint to each bush three times a week, between each feeding. I likewise mix iron-sulphate into the spray in the same proportion.

Recently there has been put on the market under various names a product even more effective than iron-sulphate and with the major advantage of a long period of effectiveness. This is iron-chelate. At the moment it looks like the answer to a number of problems of soil balance. Some preliminary investigations, indeed, indicate that acidity of the soil may become a minor factor if, as seems indicated, the chelates eliminate the iron-blocking action of alkaline soils.

Simultaneously, investigation of such chelating action has added another value to organic matter in the soil. We have always known—the "we" referring to the human race—that organic matter seemed to have a miraculous effect on plant productivity. Chief virtues of the manures, animal and green compost, peatmoss and other such materials has been thought to be their water storage properties, bacterial action, and a minor amount of plant food—nitrogen, phosphates, and potash. To these must now be added their chelating action or "grabbing" of the three chief food elements from rock, soil, and other portions of the soil. A good mixture of organics, for example, will make available a far higher amount of phosphate than that contained in the organic itself.

My program is to add to two tons of cow manure in the fall, a hundred pounds of ground granite, containing in not readily available form about five percent potash, and a hundred pounds

of superphosphate. Forked in, this makes an extremely valuable mulching material as well as one to be mixed with the soil on preparing rose beds.

The answer to effective plant feeding, then, is to provide proper foods in such form that the plant gets proper benefit.

It might be well, even if it's old stuff, to review what these basic foods are. The first is nitrogen which is largely active in the production of leaf growth. Phosphate, the second in the stated formula, is the flower producer but even more important, chief agent in the making of strong roots and canes. Potash, the third, is the regulator. All, of course, have some effect on all the factors of growth.

The balance is stated in the formula of the fertilizer, such as 6-8-6 or 20-20-20 or some such arrangement. The first, for instance, is six percent nitrogen, eight percent phosphate and six percent potash; the second, twenty percent of each. The remaining percent is filler.

Generally speaking, in my experience, clay soils are deficient in phosphates, sandy soils in potash. However, if you are really going to get the best out of your fertilizer, a soil test is the real answer. There are many sources for a soil test, and it is not expensive.

The average gardener would do well to talk to his local nurseryman, to ask questions of the "experts" in his garden club and, above all, to watch his own efforts. Certain rules are well to keep in mind:

1. Too early or too late use of *nitrogen* promotes weak, sappy growth which dies quickly in cold or great heat. Thus, the use of a good 0-14-14 or 0-10-10 for a last dry dressing about two months before the first frost and another two months before the last frost insures good root growth and hardening off of canes.

2. Too late use of potash in the spring will hold your plants and blooming back and potash will burn.

3. Phosphates are the fairy godmothers. The plant will not absorb too much for its own good. A dosage, when there is color in the bud, will greatly enlarge the flower, be it rose, zinnia or tulip. Also, such growth is sturdy and healthful.

The modern gardener has these methods of providing plant food:

1. By leaf feeding, in other words, sprayed on.

2. By dry application lightly scratched in.

3. By application in water as a liquid.

Advertising has greatly over-emphasized the first method in my opinion. The plant will absorb a far higher percentage of nitrogen than either phosphate or potash. Thus, the immediate results are often as spectacular as advertised. As time goes on, however, the results have not been so happy as reported by many with whom I have spoken, as well as in my own experience. The first year I was delighted. The second plant growth became stringy, flower production fell off, and worse, blackspot, mildew, and die-back became alarming. Most manufacturers recommend a heavy dripping of the fertilizer on the ground. If this is heavy enough, it may become primarily liquid feeding.

Dry application is the older, tried method applicable to the very large garden. I do urge, in such case, that lesser applications once a month be utilized rather than less frequent, heavy applications.

My own method is to use liquid feeding for our roses during the growing, blooming season. I use half-strength every two weeks, about two gallons to the bush, after a heavy watering. There are many formulas varying from 8-20-16 to 20-20-20, to 13-26-13 or even 20-10-10. Inquiry at the local nurseryman will tell you what is best for your locality. When you think of price, remember that an 8-10-8 at half the price costs the same as a 16-20-16 and has more residue.

With our red clay, I prefer a 20-20-20 with frequent additional superphosphate, often to the extent of the same amount of that as of the fertilizer.

Application is easy. I mix a garbage can full of concentrate — about ten pounds of fertilizer to twenty-five gallons of water; a mixing syphon on the hose gives a fifteen to one mix. I then give each bush thirty seconds by the hose—this is two and a half gallons at our water pressure. To find out the exact amount, time the period it takes to fill a ten-quart pail. Also, periodically, stir up the concentrate.

If your garden is not too large or cost is not too much of an item, there are many fine liquid fertilizers on the market and one is probably just right for your locality.

This past year, however, I have been mixing my own at a fraction of the cost and have been able to vary the proportions to fit the need as the bushes and flower production indicated it.

The formula I have used has been for the concentrate:

Nitrogen—one and one-half pounds of ammonium nitrate and one and one half pounds of ammonium sulphate.

Phosphate—eight pounds of superphosphate.

Potash—one and one half pounds muriat of potash.

To the gallon of concentrate this would be eleven tablespoonsful of super-phosphate and two each of the other elements.

If you like, you can use a cheap, dry fertilizer, varying the amount according to the formula. Thus, on a 6-8-6, about a pound fertilizer to a gallon of concentrate would be correct; for a 10-12-10 mixture, two-thirds of a pound would be correct.

Yes, you're going to have a lot of sediment left in the bottom, and you must stir fairly often. However, the vital salts quickly go into solution and what remains is largely filler. When I finish, I fill up the garbage can with plain water and dip out a bucket full of the dregs for the hedge and shrubbery. Enough remains to give them a real shot in the arm.

Above all, do experiment. Liquid fertilizer gives such immediate results you can quickly correct for an immediate condition. It is out of such experimentation plus plenty of water that the true green thumb develops.

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BOOK SERVICE

THE NEW YORK BOTANICAL GARDEN

BRONX PARK NEW YORK 58, N. Y.

LIBERTY HYDE BAILEY

By Dorothy Ebel Hansell

On December 27, 1954 newspapers announced the death of Liberty Hyde Bailey, celebrated dean of American gardeners, and recognized throughout the world as an eminent authority in the fields of botany, horticulture and scientific agriculture. He passed away in his sleep during the night of December 26 at the age of ninety-six, and thus ended the amazingly long, active career of a man who was an educator, administrator, botanist, horticulturist, author, humanitarian.

Liberty Hyde Bailey was born on March 15, 1858, on a farm near South Haven, Michigan, an area that was still a wilderness. His father, Liberty Hyde Bailey, Senior, was not content with just farming the land; he wanted it to be a good farm — he wanted his orchards to grow the best fruits, and so he sent all the way to Rochester, N. Y., to the then great Ellwanger and Barry Nursery for his trees. Thus young Liberty, with his two brothers, was exposed at an early age to the best farm practices of the day; but it was he who took the keenest interest and showed remarkable talent, even when only ten years old, in grafting. Later he became interested in vegetables and in the flower garden which his mother had so tenderly cared for until her death. (When he became a member of the faculty of Cornell University, he took some roots from that garden with him.)

Liberty Hyde Bailey, Senior, was interested not only in his farm and orchards, but in gardening and in flowers. So it can be justly claimed that the son's deep love of gardens and flowers was an inheritance from both parents.

When he was nineteen years old, Liberty Hyde Bailey entered Michigan Agricultural College at East Lansing, from which he graduated in 1882. Shortly thereafter, he became an assistant to Dr. Asa Gray at Harvard University; then he served as Professor of Horticulture and Landscape Gardening at Michigan Agricultural College for three years; and in 1888 he accepted the post of Professor of Horticulture at Cornell. When he was appointed Dean of the College of Agriculture in 1903, he said he would serve ten years. At the end of the ten years, he did resign; and he devoted the next forty years to plant collecting, plant breeding, research, writing, and the development of the Bailey Hortorium.

He built the Bailey Hortorium, with its collections of cultivated and wild plants in excess of two hundred and seventy-five thousand specimens, with funds he and Mrs. Bailey donated to Cornell in 1935, when they celebrated their seventy-seventh birthdays. And he also personally financed all his plant collecting trips, covering some two hundred and fifty thousand miles.

On April 29, 1948, two hundred scientists, horticulturists and other friends assembled at a dinner at Cornell University in honor of his ninetieth birthday. It was not his birthday, however, for Dr. Bailey had spent that day, March 15, in a jungle in the West Indies collecting specimens of palms, "new species—never described and never named by man."

Dr. Bailey wrote many books. His first important contribution to horticultural literature was the *Cyclopedia of American Horticulture,* published in three volumes in 1898. *The Cyclopedia of American Agriculture* followed; then in 1913 he published the *Standard Cyclopedia of Horticulture* in six volumes, and since revised. *Hortus* was first published in 1930, reprinted with a supplement in 1935; then came *Hortus Second* in 1948; and *Hortus Third* is expected. *Hortus* was compiled jointly with his daughter, Ethel Zoe Bailey.

The Holy Earth, published in 1915, reveals his philosophy, his close regard for "kindly Mother Earth." "Every man in his heart knows that there is goodness and wholeness in the rain, in the wind, the soil, the sea, the glory of the sunrise, in the trees, and in the sustenance that we derive from the planet. . . . We are so accustomed to these essentials—to the rain, the wind, the soil, the sea, the sunrise, the trees—that we may not include them in the category of good things . . . I think we should teach all children how good are the common necessities, and how very good are the things that are made in the beginning."

The Garden Lover was written in 1928—one of the "Background Books for the background people, the farmers and gardeners, then more remotely situated and more decentralized than now. . . ." (Andrew Denny Rodgers: *Liberty Hyde Bailey*). Many of the thoughts Dr. Bailey expressed therein are applicable today, for example: "The amateur in gardening grows plants for the love and admiration of them. To him or her the interest lies in the individuality of plants rather than in sameness of specimens. Variety is verily the spice of life to him." "There is no danger that the amateur plant lover must pass . . . The amateur will persist as long as the mind craves variety in experience and as the seasons hold their charm."

". . . The amateur is the ultimate conservator of horticulture . . . If gardening is to contribute great satisfaction to our people, it must rest directly on the feeling for plants and recognition of kinds; . . . One never knows a plant until one grows it and cares for it from first to last in all vicissitudes . . . The purchased plant in full bloom or mature condition is not very close to one's affection."

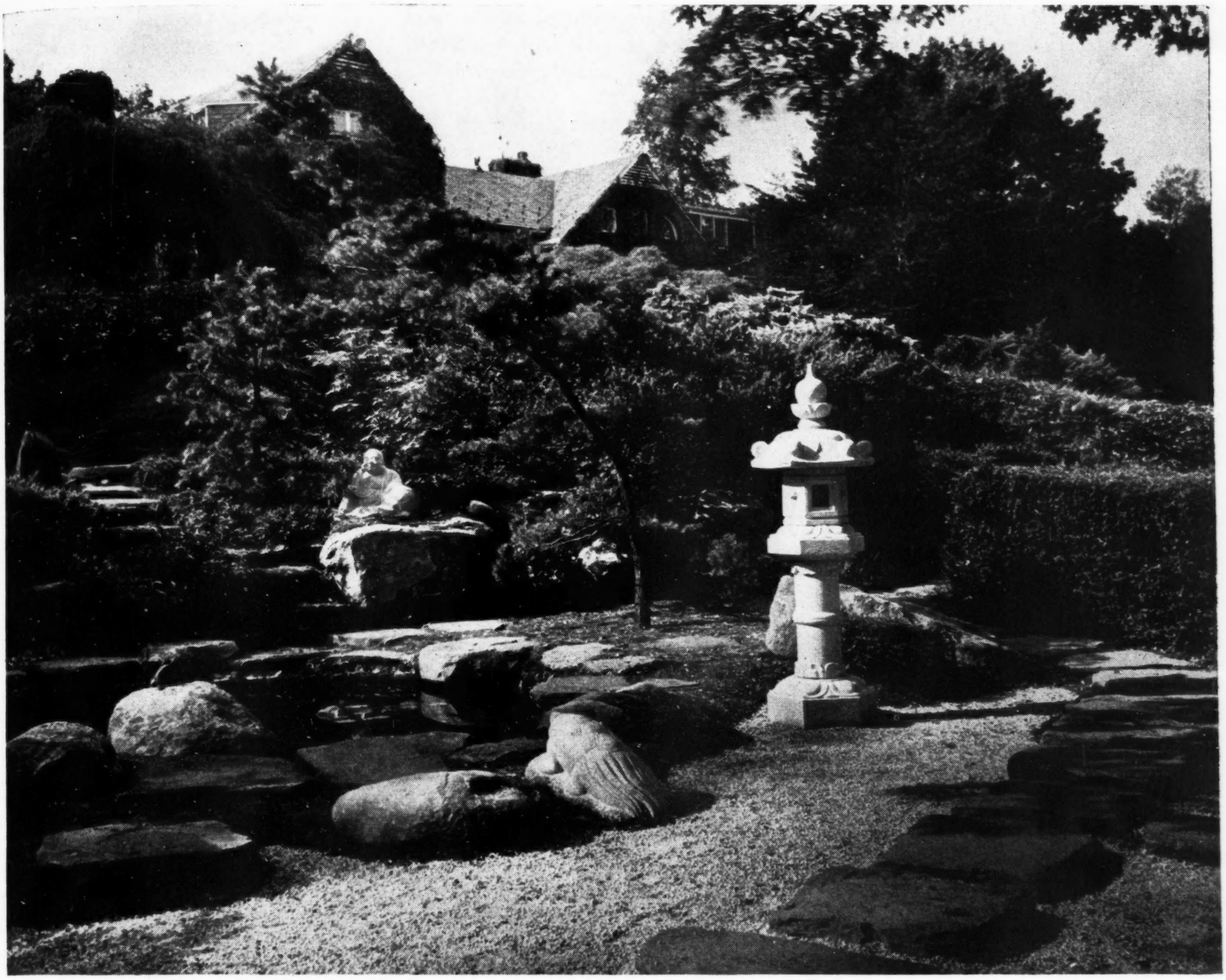
The Garden Lover also includes a valuable chapter on "The Botanic Garden Idea."

The Garden of Gourds, The Garden of Larkspurs, The Garden of Pinks, The Garden of Campanulas, The Manual of Cultivated Plants, The Pruning Manual—these and many others are familiar titles to American gardeners. But let us recall what Dr. Bailey had to say about his books when he addressed the guests at his ninetieth birthday dinner:

"I have written books. I suppose that several hundred have gone through my hands as editor, but we looked it up some four or five years ago and we found that I, myself, had written and published only sixty-five books. We are now reading proof on a large one. I have all the illustrations done for still another, and it is about half written, but my opus magnum is not yet begun.

"I have not thought of the making of books as necessarily for publication, but I have always enjoyed the physical exercise of writing a book. I have never yet dictated anything for print. All my early books went to the printer in hand writing. Printers then could read hand

(Continued on page 57)



The Japanese garden of Edward M. Bratter at Scarsdale, New York, is pleasant to behold and a place in which to reflect and relax.

I Built a Japanese Garden

By **Edward M. Bratter**

I HAVE RECENTLY COMPLETED a Japanese-type outdoor garden. The planning and building of it have given me so much pleasure that I am eager to share my pleasure and my acquired but incomplete knowledge.

I should like to emphasize that I do not pretend to be expert. To be expert in this field requires years of contact with the theory and symbolism which have developed during more than one thousand years in Japan, where gardening has occupied a much more important place in the national culture and every-day life than it has in the western world. In Japan, gardening is one of the really serious arts—has been ever since olden days when the samurai, or warrior class, were its chief patrons.

However, I am convinced that it is not necessary to be expert in the history and symbolism of Japanese gardens in order to build one here in the United States, or to enjoy one.

Japanese flower arrangement is becoming more widely accepted. Likewise, I believe that the Japanese-type garden will become more popular as more people become acquainted with its beauties and possibilities. The Museum of Modern Art of the City of New York has recently built such a garden as an adjunct to its Japanese exhibition house. The Brooklyn Botanic Garden (Brooklyn, New York) has had an extensive Japanese garden since 1915. Many Japanese trees, shrubs, and flowers have been successfully transplanted to the United States because of the similarity in climate and have become commonplace. Included among the more familiar are azaleas, camellias, ilex, andromeda, maples, flowering cherries, iris, and lilies.

I suppose the explanation of why there are so few Japanese-type gardens in the United States particularly in the east-

ern part, is to be found in the fact that so much of our culture is of European origin. Until Commodore Perry's visit to Japan in 1853, very few Americans had ever visited Japan. With the opening of trade, travel increased somewhat; but during most of the last twenty years, when tourism and gardening have grown so in the United States, our relations with Japan were not friendly. Now that Japan is our ally in the "cold war" and travel to Japan is a matter of about two days by air, we may anticipate a more receptive attitude toward its cultural offerings.

To many of us, the words "Japanese garden" mean the miniature type of dish garden generally available at florists, replete with miniature curved bridge, tiny animals, and the like. While this type of miniature garden has many attractive possibilities, usually it is not even a miniature of the kind of outdoor Japanese garden which I am about to discuss.

When I decided to build a Japanese-type garden I had never seen one. However, I had read some of the books hereinafter referred to, and, more important, I had seen the illustrations contained in these books and some of the recent Japanese books, and I had some familiarity with Japanese flower arranging. I came to the conclusion that this type of garden would give me a lot of garden in a relatively small space, with reasonable annual maintenance, and that it would give me a "kick" or stir in the blood to build and then enjoy it. I am glad to say the realization has been up to my expectations in all respects.

With this type of garden, there is the opportunity to accent some features, such as natural stones, water, shape of trees, and to minimize or even eliminate others, such as lawn and flowers, so that even though the garden remains "natural" rather than formal, it still permits personal artistic expression by the designer. In other words, it is not a replica of a natural woodland scene but rather a shaping of the elements found in nature, particularly rocks.

What is a Japanese-type garden? Implicit in my definition are the reasons which prompted me to build one. I describe it as a garden in which

(1) the design is more important than the variety of plant material;

(2) the topography, rocks, and water or simulated water are highly important elements of design;

(3) there is a minimum of symmetrical, geometrical, or formal shape;

(4) the major emphasis is to create the impression of a scene which might be found in nature, but not a replica of an actual scene, including a series of compressed vistas in a relatively limited area;

(5) there is usually included, in addition to a pond, an island and a waterfall (or a simulated river bed)

(a) rocks of such size, shape and placement as to create certain impressions (apart from the old-time Japanese symbolism);

(b) stepping stones chosen with an eye to design and placed so as to require slow, watchful, and deliberate walking through the garden in either zig-zag or "sea gull" style or in "scattered island" design;

(c) trees chosen primarily for shape, with one or more having a windswept or grotesque appearance indicating age and success in meeting the onslaught of wind and weather, and with the majority of trees and shrubs evergreen so as to permit year-round enjoyment;

(d) gravel or sand (either raked for design or natural) heightening the effect of the water and bridging the gap between the rocks and the earth;

(e) minimum or absence of flowers, color interest being primarily afforded by the various shades of green and the differences in texture of leaves (where flowers are desired, plants are usually grown in pots which find a place in the garden only while in flower so as to avoid the sight of dead blossoms);

(f) no lawn — instead moss, other groundcovers, and sometimes bare earth;

(g) places to sit and enjoy the scenes—sitting stones, benches, garden house, or possibly a tea house (a tea house is a project by itself and is by no means a necessary accessory);

(h) one or more fences or arbors, possibly of bamboo and of open design;

(i) one or more Japanese stone lanterns and possibly a stone pagoda (while these are generally used, I do not believe them to be indispensable);

(j) a bridge where it provides a vantage point and does not appear to be too artificial or contrived;

(k) an entrance gate (in my case, I chose to use a hedge of *Ilex bullata* as more appropriate).

"Beauty is in the eye of the beholder." The Japanese-type garden has given me what I wanted — a garden which is pleasant to behold — which evokes a feeling of nature at rest — a place in which to reflect and relax. To me, the sound and sight of the miniature waterfall and the sight of the large gold fish just beneath the stepping stone over the pond bring relaxed and pleasant thoughts. I could sum it up as a garden which my imagination translates as a series of woodland vistas.

Books on Japanese Gardens

Even if you do not intend to build a Japanese-type garden, you may enjoy reading about them and seeing pictures of some of these highly developed, imaginative creations of gardening artistry.

Currently in print and available at many book stores are the following:

1. *Japanese Gardens* by Professor Matsunosuke Tatsui, published by the Japan Travel Bureau in Japan, 1952—70 pages 5¼″x7¼″. An excellent summary of the history and theory with some illustrations.

2. *A Thousand Years of Japanese Gardens* by Samuel Newsom, Tokyo News Service, 1953—318 pages, 7½″x10½″, profusely illustrated with photographs.

3. *Art of the Landscape Garden in Japan* by Tsuyoshi Tamura, Kokusai Bunka Shinkokai (Society for International Cultural Relations), Tokyo, 1935. Reprinted in 1947 in paper cover with relatively poor printing — 245 pages, 8″x11″, well illustrated with drawings and photographs, and a complete chapter on the materials required.

4. *Japanese Garden Construction* by Samuel Newsom, published by Domoto,

The windswept pine is an important element in the overall design of the author's Japanese garden.

Kumagawa, and Perkins in Tokyo, 1939 — 302 pages 9″x11½″, of detailed information and of great value to anyone intending to construct a Japanese garden. This is quite scarce.

The following are out of print but are available in the library of the New York Horticultural Society, and, for the most part, in the library of The New York Botanical Garden:

1. *Landscape Gardening in Japan* by Josiah Conder, Tokyo, 1893 — 159 pages 11″x14″. This is the authoritative work in English, profusely illustrated with drawings, and although published over sixty years ago, appears to have influenced all subsequent writers. Although it does not show the developments of the last sixty years, it will be of great help to any prospective builder of a Japanese garden or any student of the subject.

2. *Supplement to Landscape Gardening in Japan* by Josiah Conder—plates by K. Ogawa, 1893, Tokyo; a companion volume to the preceding, consisting of photographs.

3. *Gardens of Japan* by Jiro Harada, Albert & Charles Boni, Inc., 1928—180 pages 8″x11½″, 40 pages of description and 140 pages of photos.

4. *The Art of Japanese Gardens* by Loraine E. Kuck, John Day Company of New York, 1940—300 pages 7¾″x 10¼″, including 64 pages of illustrations. A beautifully written book of the history and art of Japanese gardens, of great value in increasing one's appreciation but of limited value in helping one to build a garden.

5. *Japanese Gardens* by Mrs. Basil Taylor, Methuen & Co. Ltd., London,

A Japanese garden is "natural" rather than formal, but it does permit artistic expression by the designer in his skillful blending of rocks and water and plants.

1912—298 pages 7¾″x10¼″, including 28 pictures in color. It may be described as similar to the preceding.

6. *Flowers and Gardens of Japan* by DuCane, Adam and Charles Black, London, 1908 — 249 pages 6¼″x9″, with 22 illustrations. A beautifully written impression of the authors' visit to the gardens of Japan. As the title indicates, much of the book deals with flowers. Very pleasant reading but of little value, unless one has read one or more of the preceding books.

In addition to the usual book sources, the following may be in a position to supply you. Specializing in oriental books—Orientalia, Inc., 11 East 12th St., New York City; Charles E. Tuttle Co., Rutland, Vermont; P.D. and Ione Perkins, South Pasadena, California. Specializing in horticultural books—K. Gregory, 222 E. 71st St., New York City; Elizabeth Woodburn, Booknoll Farm, Hopewell, New Jersey.

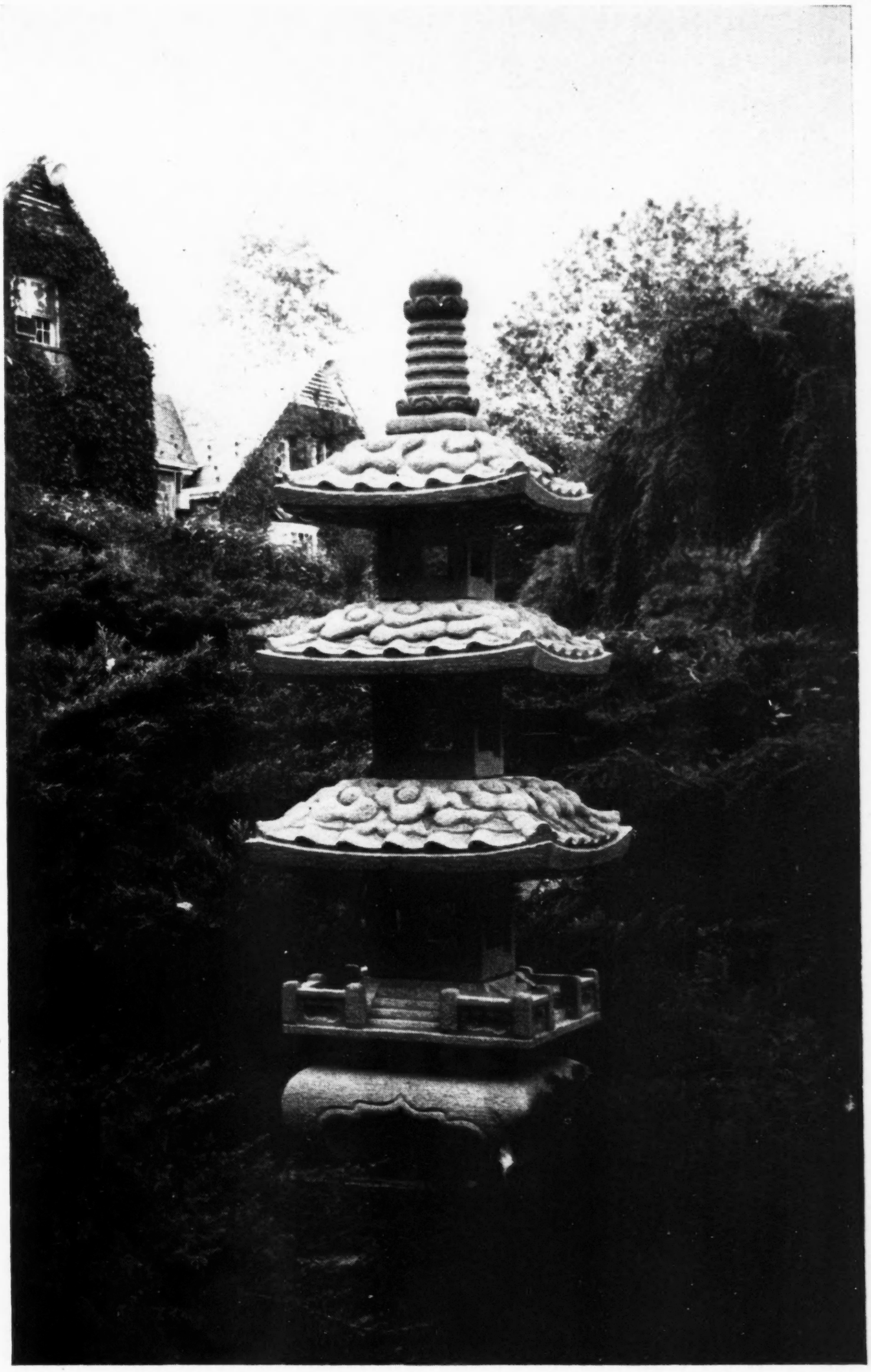
PRACTICAL SUGGESTIONS FOR BUILDING A JAPANESE GARDEN

Once again may I confess that my knowledge falls far short of my eagerness to share with others my pleasure in planning, building, and living with a Japanese garden. While gardening has been my hobby for over fifteen years, I know there is much for me to learn and that the books above listed provide a much more complete and authoritative explanation of how to build a Japanese garden. It is my purpose in these pages to present an outline of procedure, with a view of stimulating others to undertake such a garden after they have acquired more knowledge through a study of one or more of the books described. I found these books so worthwhile, both as to content and style, that they are now permanent parts of my library.

Because I have found that the information is not generally available, I give the names and addresses of all the advisers and the suppliers of various component parts, which are known to me, fully realizing there must be others of whom I am not aware and whom I do not wish to slight.

When I came to the conclusion that I wanted to change my conventional type rock garden and lily pool into a Japanese-type garden, I decided to seek the assistance of a landscape architect or gardener familiar with Japanese gardens. I was fortunate in locating T. Ito of Nippon Shoji, 501 East 82nd Street, New York City. I was also fortunate in having a visit with and some valuable suggestions from Tansai Sano, Aburanokoji-Dori, Marutamachi Aguru, Kamikyoku, Kyoto, Japan, who did the work for the Museum of Modern Art of the City of New York. On the West Coast, Samuel Newsom, of 19 Sunnyside, Mill Valley, California, author of the recommended books, *A Thousand Years of Japanese Gardens* and *Japanese Garden Construction,* is available. While I believe the assistance

From the stepping stones, one catches the flash of goldfish swimming in the placid pool.



A stone pagoda is a prominent but not indispensable architectural feature of a Japanese garden.

of an expert is desirable and will represent economy in the long run, it is by no means indispensable.

The skeleton of the garden is all important and a detailed plan of eventual grades, location of pool and waterfall (or simulated river bed) and principal rocks, is essential if lost motion is to be avoided. The plan should include a sequence of the various steps so that the construction of the pond, changing of grades, and moving of trees do not interfere with each other. Since a limited area is usually put to maximum use, the danger of collision of the various steps is greater than usual and careful advance planning is advisable.

Sequence of construction would probably follow this order: (a) rough grading; (b) construction of pool and waterfall; (c) placement of island in pool; (d) placement of larger rocks; (e) water lines for pool or built-in sprinkler and electrical lines, if required for pump or lighting; (f) finished grading; (g) stepping stones; (h) placement of lanterns and construction of benches, garden-house and fence; (i) trees and shrubs; (j) moss and other groundcovers; (k) pebbles.

Plant Material

A wide variety of trees and shrubs is eligible. Most of the plant material is generally available at nurseries or can be located through the *Plant Buyers Guide,* a book published by the Massachusetts Horticultural Society. The chief problem is locating one or two evergreens of windswept shape. Nurseries usually do not carry such items, though an old established nursery may have them.

I made extensive inquiry and finally acquired a weeping blue spruce of the desired shape from Detmer Nurseries, Tarrytown, New York. This nursery was originally established as the private arboretum of Julian Detmer and includes some unusual plant material. A pine was growing in an empty lot not far from my residence; it had been "topped" years ago and as a result had a windswept shape. It cost me nothing but the labor of moving. Before I found it, I had planned to get a tree from a mountain top or near the sea. The shapes of these two trees are an important element in the over-all design of my garden, and I do not regret the efforts involved in locating them.

The only other item which is not generally available commercially is moss. Of course, it can be collected in the woods, but the moss used in the Japanese garden of the Museum of Modern Art of the City of New York and in mine came from Mrs. E. K. Hammond, Split Rock Road, R.D.#2, Boonton, New Jersey, at a cost of $6.00 a bushel. This is enough to cover about sixteen square feet. I also purchased meadow moss and ferns from Isaac Langley Williams, Wild Flower Gardens, Exeter, New Hampshire. While I was able to obtain some moss from the woods nearby, I found it easier to complete my needs by purchase.

My garden includes the following material, a good portion of which I

had before in my former rock garden. I list it merely as a guide.

Abelia grandiflora
Abies Veitchii
Acer palmatum
Albizzia Julibrissin
Astilbe chinensis and *crispa*
Buxus microphylla compacta and 'Newport Blue'
Calluna vulgaris
Chamaecyparis pisifera sqarrosa nana and *obtusa gracilis nana*
Cornus florida
Cotoneaster divaricata
Eichhornia crassipes
Enkianthus campanulatus
Erica carnea
Euonymus japonicus variegatus
Ferns
Hosta caerulea, lancifolia, and *undulata variegata*
Ilex crenata and *crenata Helleri*
Juniperus chinensis japonica, Sargentii and *squamata prostrata*
Leucothoe axillaris and *Catesbaei*
Miscanthus sinensis, sinensis gracillimus, sinensis zebrinus, and *sinensis variegatus*
Moss
Picea glauca conica and *pungens Kosteriana* weeping form
Pieris japonica
Pinus densiflora, flexilis, Mugo Mughus, parviflora, Strobus, and Strobus nana
Polypodium vulgare
Rhododendron Hinodegiri (Azalea Hinodegiri), indicum (Azalea macrantha), mucronatum
Taxus cuspidata nana
Tsuga caroliniana, canadensis minima, and *canadensis pendula*
Vaccinium angustifolium laevifolium and *pensylvanicum*
Vinca minor

Water Features

If you intend using a pool, I suggest a reinforced concrete pool of irregular shape with a built-in drain. Because generally it is difficult, if not impossible, to get a water-tight joint between natural stone and concrete and because many natural stones are not water-tight, I suggest building a complete concrete pool with vertical or almost vertical sides and then covering the walls with natural stones or cypress. In order to conserve water, I installed a recirculating pump (Ingersoll Rand — No. IKRVS—¼D, which is rated to deliver at least five gallons a minute against a fifteen-foot head and a distance of one hundred feet). I used three-quarter inch plastic pipe to bring the water from the pump to the top waterfall. Plastic pipe is inexpensive and, because it is reasonably flexible, it is easy to lay. For those interested in building the pool themselves, see Chapter 9 of *The Home Mechanics Outdoor Handbook"* by R. R. Hawkins and C. H. Abbe, D. Van Nostrand, 1950.

Where water is not feasible, the illusion of water can be created by making a dried river bed—using rocks, pebbles, sand, and appropriate plant material. The illusion of water can also be had by using sand to simulate a beach with occasional rocks. The imagination of most garden lovers is vivid enough to create the impression of water.

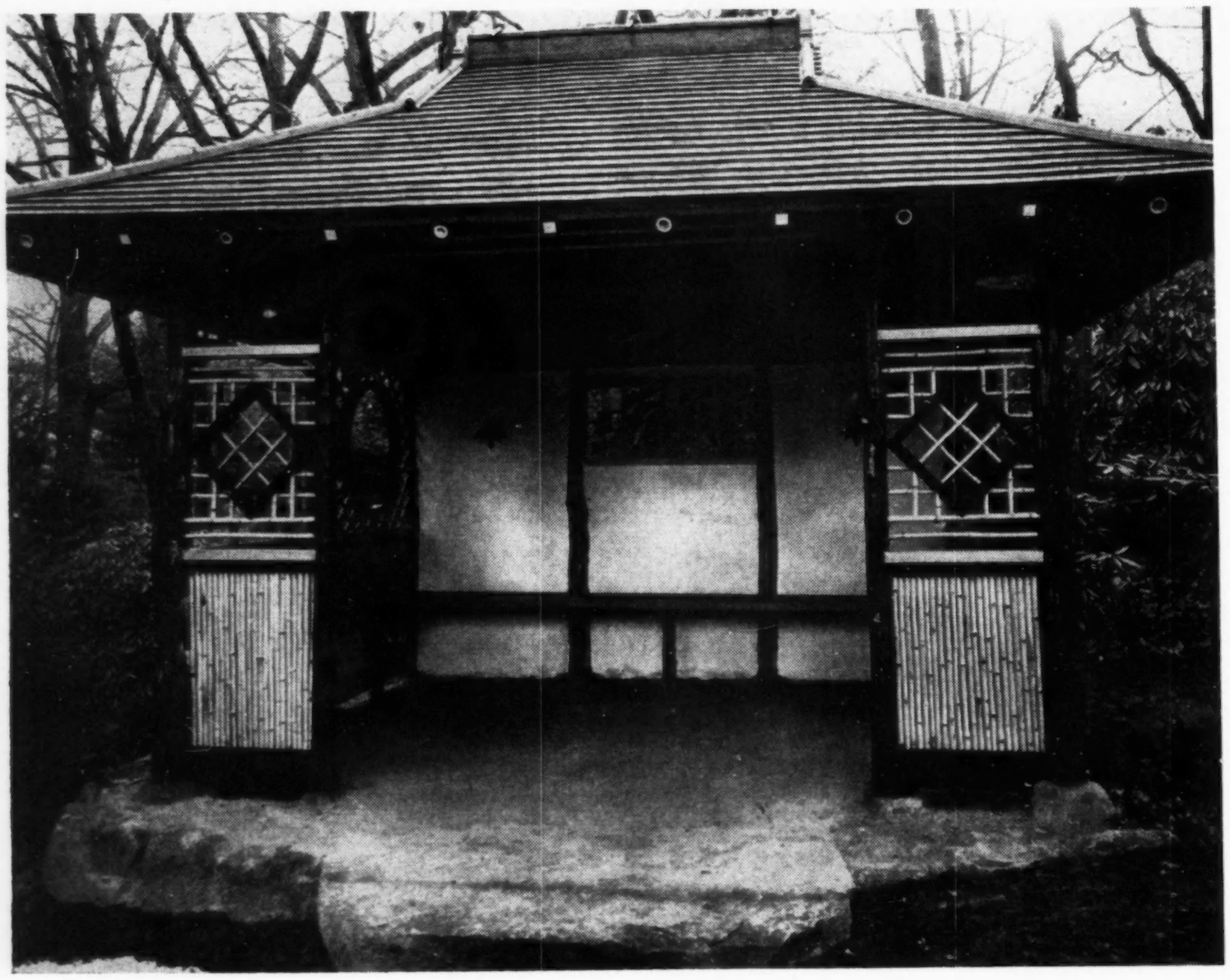
Accessories

On the East Coast, Japanese lanterns, pagodas, and such accessories are not generally available. I purchased mine through Mr. Ito of Marutoku Stone Store, 193-2 Chome Mutsumicho Minamiku, Yokahama, Japan, which publishes an illustrated price list. On the West Coast, I understand, lanterns may be purchased from K. H. Nishi & Son, 2211 Corinth Avenue, West Los Angeles, California. Although, as indicated above, lanterns are generally found in Japanese gardens, I believe a Japanese-type garden is possible without such accessories. They can be added later as acquired.

I have three stone benches made of natural flat stones found in old farm walls, approximately six to eight feet long. Apart from the labor of hauling them and a trifling mason's charge, they cost me nothing.

My garden-house is 13 x 16 feet, constructed of natural cedar log uprights, white pine, redwood, and bamboo. The design follows a drawing in Conder's book. I wanted a simple structure, not only because of cost considerations, but because I did not wish it to be too important in size. My garden-house was built by Roy Mitsuda, of 107 Amsterdam Avenue, New York City, and Dick Koga, of 991 Columbus Avenue, New York City, both of whom helped to construct the exhibition house of the Museum of Modern Art. Bamboo can be purchased from Bamboo & Rattan Works, 901-7 Jefferson Street, Hoboken, New Jersey.

Usually there is a gate entrance to the Japanese garden. I did not use a gate, because on one side there is an



The garden house is constructed of cedar log uprights, white pine, redwood, and bamboo.

The garden house, Japanese in conception and structure, fits admirably into its setting of evergreen shrubs. The grotesque outline of the Japanese maple against the massive rock is also in keeping with Japanese artistry.

ilex hedge and on another side two Japanese cut-leaf maples to frame the entrance. A third side I left as it was, except that I substituted ivy for flowers; and on the fourth side I built a fence of cedar with a characteristic irregular, rough design.

A Japanese garden lends itself admirably to illumination, which produces light-shadow silhouettes and reflections of great interest. In many ways a garden illuminated at night is different from what it is in the daytime. Lighting is an art in itself. The object is not to flood light but rather to have spots of light, concealed, if possible, and with predetermined coverage. In connection with the lighting of my garden, I had the assistance of Wendel Artistic Lighting Corp., 730 Fifth Avenue, New York City; a branch on the West Coast, specializes in lighting gardens.

Cost

On a square foot or area basis, a Japanese garden is more expensive to construct than a conventional garden, largely because of the cost of moving sizeable stones. However, there is an offsetting factor in the probable lower maintenance and greater permanence.

Hints On What To Avoid

Avoid showing cement as much as possible — wherever feasible, have adjoining stones of appropriate shape, color, and strata.

Avoid plant material which is of too rapid growth because, even with heavy pruning, it may be difficult to keep the original shape and size.

Avoid plant material which may not prosper in view of weather—sun and water available.

Avoid moving heavy stones without enough experienced manpower. One man too many is generally advisable.

Avoid overdoing stone work and overcrowding plant material—remember space is an important element in design.

While a bridge is something to be desired, it may be difficult to find a suitable location, it may be out of scale with the rest of the garden, and instead of providing a good vantage or resting point, it may cut the design. Although I wanted a bridge over my pond, I settled for stepping stones because it was better from the viewpoint of design.

While a gate or hedge emphasizes the entrance to the garden, consider an approach which gives a gradual transition, such as a Japanese cut-leaf maple, fence of appropriate design, or an informal shrub planting.

ODONTOGLOSSUMS in an AIR-CONDITIONED GREENHOUSE

By Donald Richardson

The following is based on the article, "A New Weather-Controlled Greenhouse" which George W. Merck and Donald Richardson wrote for the American Orchid Society Bulletin, November 1953, and the paper Mr. Richardson presented at the First World Orchid Conference in St. Louis, Mo., October 1954.—Editor.

The air-conditioned house devoted to odontoglossums, miltonias and cymbidiums.

AFTER CONSIDERABLE RESEARCH, an air-conditioned greenhouse was built at Orchidridge, West Orange, N. J. It automatically provides every essential to the health and well-being of plant material. It can be cooled as well as heated to any desired temperature. The air is filtered and free from toxic impurities. There is a proper humidifying system, automatic ventilation, and control of light intensity from spring to fall.

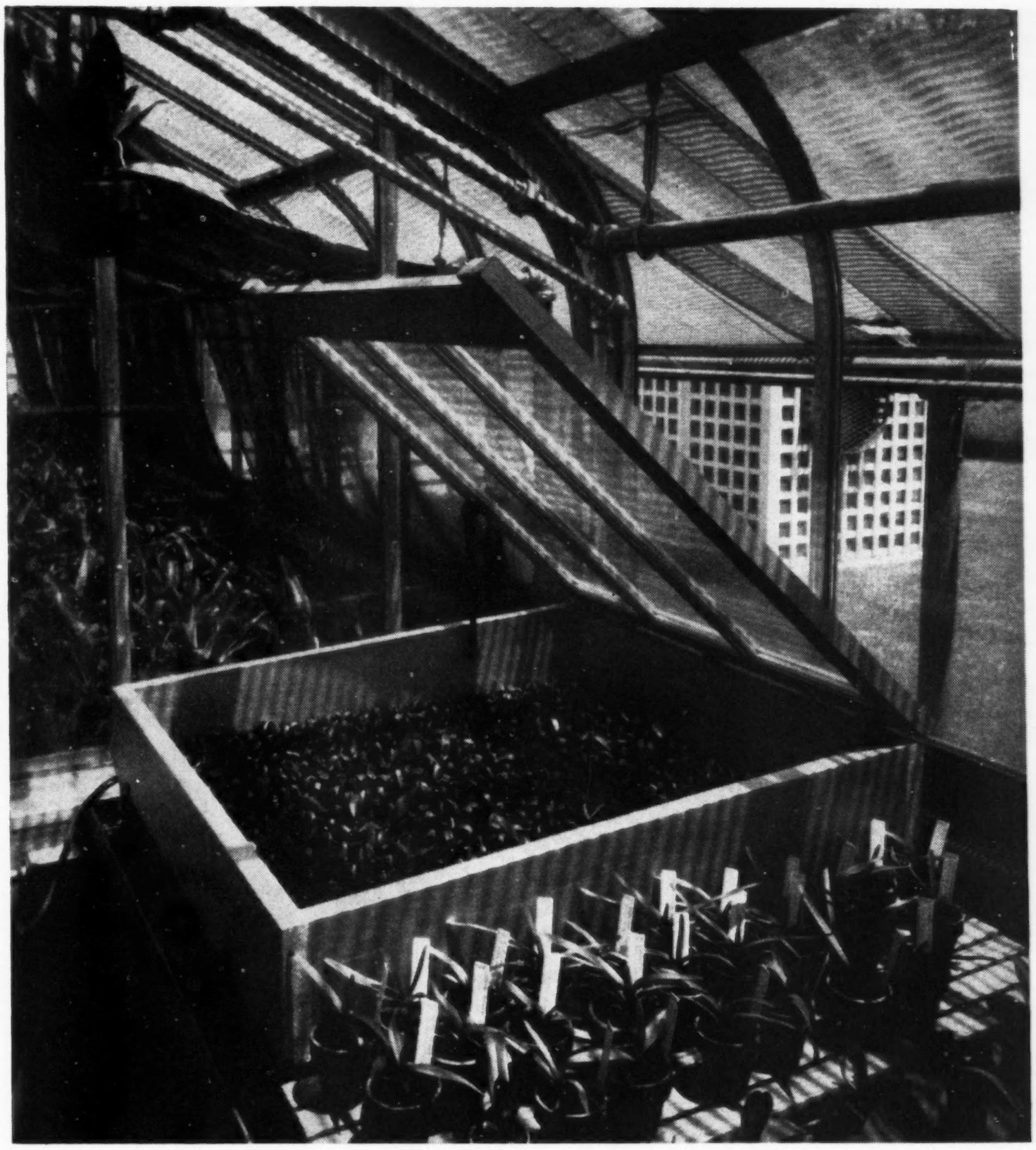
Before the actual work was begun, George W. Merck, my employer, consulted with many technicians and orchid growers. Dr. O. W. Davidson of Rutgers University, Eldridge Snyder, the architect, Mr. Merck, and I inspected private and commercial establishments across the country, and we were especially inspired by what we saw at the Earheart Plant Research Laboratory at California Institute of Technology and the installations of McKee Jungle Gardens at Vero Beach, Florida.

The eighteen by sixty-foot greenhouse, constructed by Lord and Burnham, of all aluminum and steel, is of the most modern design and divided into two compartments. The compartment nearer the head house is air-conditioned with controlled temperature, cooling and humidity; the other warmer compartment is equipped with automatic ventilation, which provides complete modulating control of the roof sash according to the inside temperature. This equipment also provides power operation by manual control to any degree and has partial opening under thermostat control to prevent wind or rain from damaging the plants during storms.

In the cattleya house there are rain-water storage tanks and a nutrient tank under the bench.

The benches are made of galvanized angles and hardware cloth, with coke trays under the side benches. The center bench is staged, to furnish all plants with an equal amount of light and to create an attractive effect. The glass in the cold section is three-sixteenths of an inch thick, butt-jointed and sealed.

An all-year temperature of 55-60°F. is sought, but on very hot summer days the temperature may rise to 67°, with 60° at night. The unusual heat gain characteristic from sunlight and heat transmission through the glass, combined with the necessity to maintain



Here is a seedling case at Orchidridge, with an electric heating cable in the tank of water below. Note the fin radiator visible back of the bench and heating pipes above.

definite temperature and humidity conditions without air disturbance within the house, presents factors which are not encountered in conventional air-conditioning installation.

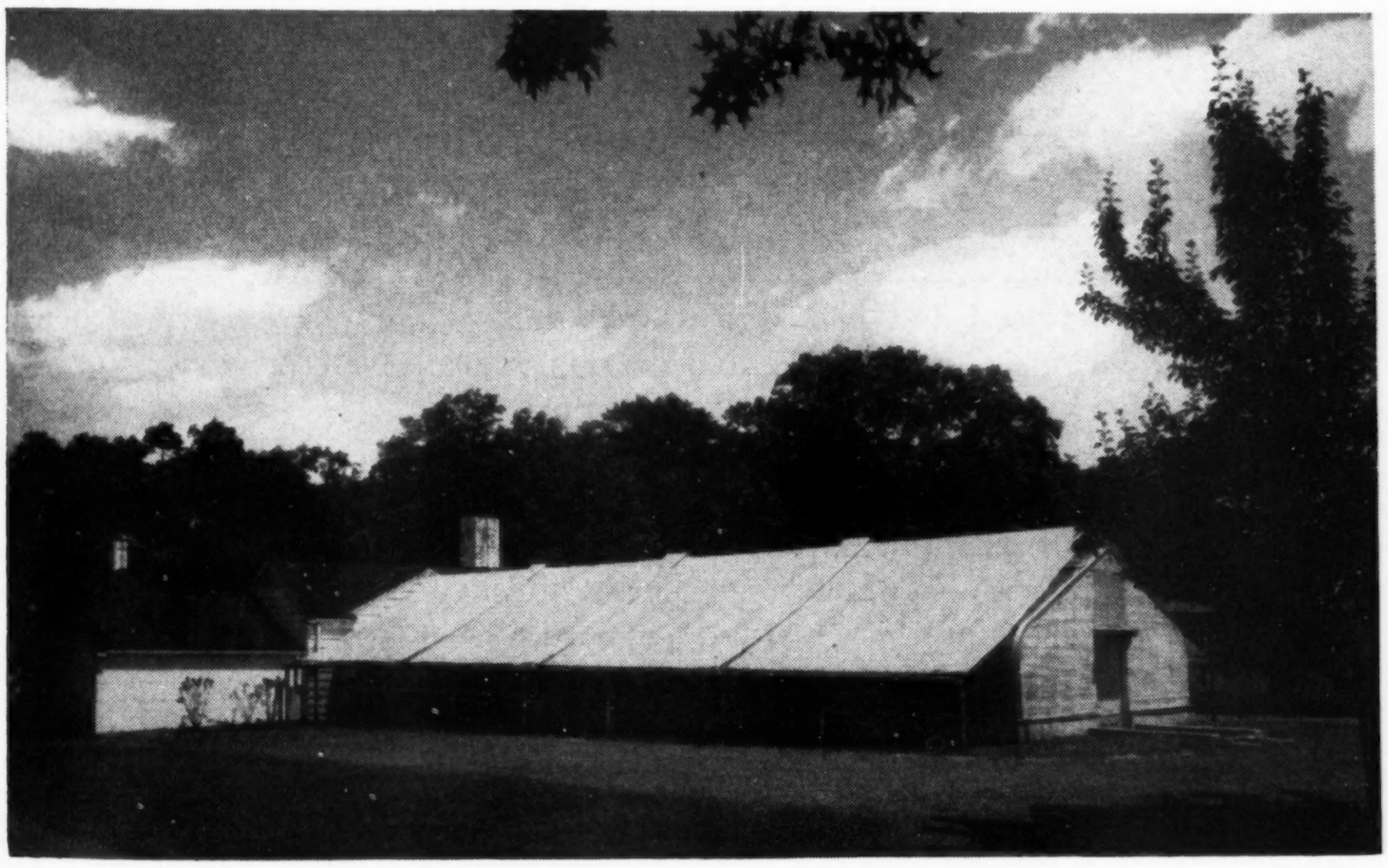
On warm sunny days, a certain amount of cold water flows continuously on the glass to supplement the cooling system. (To eliminate waste, the water is collected in deep gutters at the eaves of the greenhouse and recirculated.) Outside shading is provided by specially designed cream-colored plastic fabric held in tension above the glass by spring awning rollers at the ridge and a stanchion bar at the eaves with crank controls. Inside plastic screens on wire supports further temper light intensity in the air-conditioned section.

The air-conditioning unit and refrigeration system are located in a machinery room isolated to prevent vibration in the balance of the building. During winter, the air-conditioning system serves for ventilation as well as for humidification and air tempering. The transmission heat losses are offset by direct radiation from horizontal fin radiators, thermostatically controlled, above the side benches and overhead hot water pipes.

In the cool compartment experiments are being conducted with odontoglossums, odontonias, miltonias, cymbidiums, and cypripediums. In the warm compartment are mainly choice cattleyas, but there are also dendrobiums, oncidiums, cypripedium (warm house) hybrids, and phalaenopsis hybrids.

In addition to the greenhouse at one end of the service building, there is a photo-thermal compartment. This small, air-conditioned room is equipped for growing plants under completely artificial conditions, including light. Here twenty-five odontoglossum plants have been growing under artificial light for three years. The lighting system suggested by Dr. Davidson is a combination of fluorescent and incandescent lights. These give a reading of approximately 660 foot candles at plant level, the light source being thirty-one inches above bench level. The pseudo bulbs on these plants have increased in size every year, with one exception, and, on the whole, flower production has increased as the accompanying chart shows.

Comparing light readings taken in the photo-thermal house with those taken in the air-conditioned greenhouse, we find that foot candle readings in the air-conditioned greenhouse are about 2,700. More light than 2,700 foot candles caused pigmentation in the foliage,



A general view of the air-conditioned greenhouse at Orchidridge, with the photo-thermal house at the left.

FLOWERING RECORD OF PLANTS GROWN IN PHOTO-THERMAL HOUSE

Plant No.	Record No.		Year	No. of Flowers
1	261–23	Odm. crispum	'52	1
			'53	4
			'54	8
2	0610	Odm. ithone	'51	3
		(flowered, no record)	'52	
			'53	8
			'54	10
3	0340	Oda. Ladas	'52	9
			'53	8
			'54	9
4	0231	Oda. schroeder	'51	10
5	0434	Odm. crispum Xanthotes x Oda. Yvonne	'54	11
6	024	Oda. Astargia	'51	12
			'52	12
			'53	18
			'54	11
7	261–15	Odm. Luteo purpureum	'54	12
8	261–13	Odm. crispum	'52	4
			'53	4
			'54	9
9	261–22	Odm. crispum	'52	1
			'53	5
			April '54	5
			Nov. '54	7
10	261–16	Odm. crispum	'53	8
11	261–19	Odm. species	unflowered	
12	261–24	Odm. species	Dec. '54	10 buds
13	260–2	Odm. crispum	'53	9
			'54	10
14	260	Odm. crispum	'51	1
15	0334	Odm. Incana	'52	10
			'53	12
			Dec. '54	15 buds
16	261–18	Odm. Luteo-purpureum	'54	24
17	0575	Odm. crispum, Xanthates x Oda. Yvonne	'52	8
			'54	10
18	0155	Oda. Carenus	'50	10*
			'51	10
			'52	11
			'53	10
			'54	11
19	0130	Odm. Alum	'51	9
			'52	10
			'53	8
			'54	16
20	261	Odm. species	unflowered	
21	261–17	Odm. Hebraicum	'52	12
22	261–10	Odm. Luteo purpureum	'54	9
23	0124	Odm. Yolandum	'51	4
			'52	4
			Nov. '53	9
			'54	5
24	097	Odm. Petulum	'51	5
			'52	6
			'53	9
			'54	9
25	0608	Oda. Uvalda x Odm. Mandalum	'52	2
			'54	5

Note: Where no year is indicated there were no flowers.
*Before photo-thermal treatment.
Odm. = Odontoglossum
Oda. = Odontioda

so we are giving them the maximum amount of light possible under our conditions. Now, why is it possible to grow plants equally as well at 660 foot candles as it is at 2,700 foot candles? In the photo-thermal house the lights are on for sixteen hours a day every day, while the light intensity in the greenhouse is quite low on dull cloudy days.

It would seem then, that a longer period each day the year around of low but constant light intensity would compensate for the ups and downs of normal weather, with its sunny and cloudy spells, and short days of winter. I should mention that a relative humidity of seventy-five percent with a day temperature of 66°F. has produced better growths than temperatures of 60° day and 50° night. Following this observation in the photo-thermal house, I allowed summer temperatures to go to a maximum of 70° in the larger greenhouse. The result seems to be an increase in the length of flower spikes. This is not based on scientific measurements but on general observations of a number of hybrids. Naturally, with an increase in size of pseudo bulb, there is usually an increase in the number of flowers; but with the five degree higher temperature flowers are spaced farther apart, giving a longer scape.

Further conjecture on the increase of growth with odontoglossums in the photo-thermal compartment is based on the theory that day and night temperatures are constant, summer and winter, maintaining more or less constant growth, whereas in the greenhouse the winter night temperature is allowed to drop as low as 45°F.

Part of the photo-thermal house is now used for seedlings in community pots and flasks, and one or more of each planting will be placed in each compartment. It will be interesting to watch development of plants grown from seed to maturity under artificial light.

Odontoglossums germinate readily in flasks, but the community pot stage can be tragic. I have tried various composts of oak leaves and redwood fiber, osmunda, German peatmoss with redwood fiber and sand, but the best results so far are in straight German peatmoss with a little sharp sand.

Back bulbs are uncertain, these have been tried in various mediums—peat and sand, sharp sand, sphagnum moss, and results have been about the same in each. An average of about thirty-five percent will develop growths; the time seems to vary, according to the age of the bulb. I still have some back bulbs without growths that have been in for two and a half years; the bulbs are firm and good. Perhaps the most satisfactory method of asexual propagation is to sever the bulb while in the pot and leave it with the parent plant until growth forms.

Water—while I am a firm believer in rain water, results have not justified its constant use.

Potting—I have tried nearly every combination of compost but have returned to the use of osmunda three parts and live sphagnum moss one part.

Feeding — I use Dr. Davidson's formula (Wilson's Orchid Fertilizer) at about two-week intervals, but only in bright weather. Fish emulsion used exclusively at monthly intervals pro-

duced lush dark green foliage. I hesitate to use it in the winter time.

I do not pretend to be an expert on these beautiful orchids, but I am growing and flowering them well. I have much to learn, and after growing odontoglossums under controlled light, temperature, and humidity for four years, I have reached some conclusions, and it is these conclusions that I have presented to you.

Cymbidiums love the air-conditioned greenhouse in spite of the fact that it is shaded for odontoglossums. Out of eleven plants, ten flowered last spring and from the number of spikes showing now we shall have equally as good a display this coming season. It is yet too early to say much about the cymbidium experiment, which we have undertaken for the American Orchid Society under the tutelage of Dr. Davidson. Practically all the plants had to be divided last spring to get enough plants of one clone for check purposes. The plants have made good growth and a few are showing spikes; it will be necessary to continue the control another season.

MAGNOLIA (from page 37)

petals number six, sometimes seven, and rarely nine, obovate in shape and rounded to acutish at the apex, 8-9 cm. long. They are white with a pink blush near the base deepening on the outside at the base of the central vein. There are three lanceolate sepals, 2-3 or rarely 4 cm. long, pale green in bud, quickly turning white. The deciduous outer bud sheath is dark brown, membraneous, netted with slight to considerable soft white pubescence sometimes at or near the base only. Flower buds are at or near the base only. Flower buds are densely pubescent and are carried on short stalks 4 mm. in diameter, also heavily pubescent. Stamens have pink midveins towards the tips and are suffused red-purple at their base. The seed coat is yellow becoming pinkish; seeds are suspended from an elongated green torus. Leaf buds, occasionally glabrous, are generally covered with appressed hairs.

The first warm spring weather brings Slavin magnolia to its flowering stage. In Rochester freezing weather often follows, but in areas of more consistent spring weather or in situations where star magnolia rarely suffers browning, this hybrid should be useful. As has been noted with other magnolia hybrids, it seems to reach flowering size more quickly and to flower more regularly thereafter than the species.

It is proposed to call the hybrid group *M.* x *Slavinii,* with BHS No. 85 selected as the clone, for which the cultivar name 'Slavins Snowy' has been chosen. The full name of this selection is therefore *M.* x *Slavinii* 'Slavins Snowy.'

This magnolia is named in honor of Bernard H. Slavin, during whose long association with the Rochester Parks, this and many other hybrids and seedling variations were selected and preserved by him. Recognition of his work has been accorded in the naming of *Cornus Slavinii* Rehd., *Crataegus Slavinii* Sarg., *Pinus Mugo* f. *Slavinii* Hornibr. and *Robinia Slavinii* Rehd.

BAILEY (from page 46)

writing, now they cannot. And in the period of which I have spoken, I became the editor of a most ambitious magazine. . . . It was a large magazine — I think the first one of the large size now popular—'Country Life in America.' "

The library of The New York Botanical Garden has several letters written by Dr. Bailey when he was editor of "Country Life in America," and several other interesting letters from which we quote. The earliest, dated Ithaca, N. Y., November 28, 1889, and written on the stationery of "The American Garden, office of Editor of Annals of Horticulture and Horticulturists' Rule-Book," is directed to Professor Bailey:

"I am interested in a so-called bloomless apple which is being talked about in the horticultural world. I figured flowers of it in 'The American Garden' last July and am going to figure fruit of it and give a bibliography in the next issue. I notice your reference to an evidently similar variation in Bot. Gaz. June 1887, p. 145. What do you know of the history of it? Does the tree always do this? What is the fruit, etc.?"

Here is an excerpt from a letter to Prof. W. W. Bailey, Providence, R.I., dated May 1902 (we believe the abovementioned Prof. Bailey and Prof W. W. Bailey are the same person).

"I am glad to know that you have had the temerity to get a copy of the Cyclopedia—you are certainly a man of strong convictions."

A letter addressed to Whitman Bailey, Stamford Conn., and dated May 3, 1943, is an interesting sequel:

"I am, of course, the L. H. Bailey who wrote the letter in 1885 and if you wish to spare the letter, I should like to have it. It will revive old memories. I assume you are the son of W. W. Bailey, Prof. of Botany at Brown University. I remember to have visited

The late Liberty Hyde Bailey examining some of the many herbarium specimens he accumulated for the Bailey Hortorium.

him in my early days and I maintained correspondence with him through subsequent years. . . .

"In my earlier years I thought that eighty-five was a very advanced age, but having passed that period it is only one of a number. I am just in from Mexico where I went on a botanical trip."

The files of the library of The New York Botanical Garden also contain a letter from Dr. Bailey to the late Dr. John Henry Barnhart on "reading proof on a paper on palmetto" and to Dr. A. B. Stout, under date of February 6, 1925, on a "projected plant conference of a year from next summer."

The following extract from Dr. Bailey's address on April 29, 1948 is a more appropriate close to this brief resume of his remarkable life than anything we can compose:

"The measure of life is in the daily living of it and the acceptation of it for all it is worth or, at least, for all you can make of it—and you can make much of it. . . .

"to quote Kipling —

'And no one shall work for money,
And no one shall work for fame,
But each for the joy of working,
And each, in his separate star,
Shall draw the Thing as he sees It
for the God of Things as they are!'

"It is a marvelous planet on which we ride. It is a great privilege to live thereon, to partake in the journey, and to experience its goodness. My life has been a continuous fulfillment of my dreams."

Azaleas in many colors furnish a spectacular spring display at The New York Botanical Garden.

BOTANICAL GARDEN **(from page 34)**

dens' famous "Rocking Stone."

Snake Road winds through a mixed forest of gums, oaks, and elms, with a spattering of beeches and birches. Particularly striking are what I call mother beech with young. The large beech trees surrounded by multitudes of lesser root and seed-begotten saplings, not unlike a grey hen surrounded by her grey chicks. The forest along the winding road is delicately carpeted with multitudes of dog-toothed violets and spring-beauties, while each tree base is ringed with the aromatic false lily-of-the-valley.

As you continue, you cannot help but notice the interesting geologic formations known as "Roche Moutonée" or translated, sheep-like rocks—domes of gneiss that were shaped and planed by the glacier. In fact, if examined carefully, the actual scratches created by the rocky debris trapped in the glacial ice may still be seen—directionally running north to south. As you pass the southern extremity of the Thompson Memorial Rock Garden with its myriad spring blossoms, the road passes over the brook that drains out of the rock garden to empty into the marshy meadow on the left or west. If you don't mind damp feet, you will be rewarded by seeing frogs, frogs' eggs, and tadpoles. Their neighbors are an industrious but troublesome family of muskrats, whose nests and burrows are evident in the ponds formed by this little brook. However, their habit of clogging up the drain, which leads down the hillside beyond the daffodils, hasn't endeared them to the Garden's maintenance staff. But they, and the squirrels, chipmunks, rabbits, pheasants, and occasional foxes, 'possums, and 'coons seem to lend the park an air of primeval dignity and so will probably inhabit the area indefinitely.

If you follow the path alongside the west side of the chain-link fence surrounding the rock garden, you will see another curious glacial boulder. This immense chunk of upstate glacial ice-borne granite is locally known as split-rock. Evidently a cleavage plane opened slowly and frost, weathering, or roots of plants and trees finally cleft the rock in two many eons ago. At present a hornbeam or ironwood (American hornbeam) is growing alongside the boulder, much to the delight of little boys who swing from rock to branches with an eye out for park attendants. Co-incidentally, this split-rock marks the site of an Indian Village or hunting stop-over that I excavated (surreptitiously) back in 1937, when the garden crew dug up the crest of this hill to remove grass-roots and weeds. (A similar split rock along Hutchinson River Parkway also marked the site of an Indian Village and romantically provided a hiding place for Ann Hutchinson in 1643, so legend goes.)

With the Museum and Administration Building in clear view, you may carefully pick your way down a holly-clad slope where winter-red berries still show, down pine-needle carpeting, and emerge at the azalea triangle and so to your cars or subways and home.

Thus, without leaving New York City, you will have seen wild spring flowers and shrubs and have enjoyed vistas of semi-mountainous grandeur, babbling brooks and roaring waterfalls, geologic formations and wild animals, all preserved and maintained for posterity by the staff of The New York Botanical Garden.

FOR THE YOUNGER GENERATION OF GARDENERS

Grampa's Letter to Janet

DEAR JANET:

GRANDMA AND GRAMP just a few days ago motored to Bronx Park. Arriving at The New York Botanical Garden, we traveled along the edge of the Hemlock Forest over to the Rose Garden. It was the end of October, but there were many roses still in bloom.

Of course, you remember the Hemlock Forest is the home of the smartest of squirrels whose name is Snooper, and we wondered just where in the forest he was as we went past.

You also remember there used to be an old snuff mill on the Bronx River. It was all in ruins, but two squirrels —Snuffy and Sniffy—had built a nest and made their home in a sheltered spot on the top floor.

Just a few months ago "this old house" was rebuilt. Walls were straightened up, new floors put in and a brand new roof. Now it is the Lorillard Snuff Mill Restaurant and a very nice place to have lunch.

Well, Grandma and Grandpa stopped there and had something to eat. Then we met Mr. Johnson who is in charge of the building and we heard some very interesting things from him. We were sitting outdoors when a large squirrel with a very shiny coat scampered up to our table. Just when Mr. Johnson was getting ready to "shoo" him away with his cane, Gramp said, "Why that is Snuffy and he is an old friend of ours." Gramp had Oregon walnuts in his pocket and gave some to Snuffy who nibbled them with much relish and patted his tummy.

Mr. Johnson was very surprised and said, "He seems to know you. How come?" So we told him how we met all the squirrels at the Squifferee of Nineteen Fifty-Three. Snuffy walked around us as if looking for someone. "He seems to be looking for someone who isn't here," said Mr. Johnson. "I know," said Grandma, "it's Janet he expected to see. Janet is our granddaughter and she lives in McMinnville. She was with Gramp last year when they brought the Oregon walnuts to the squirrels in the Hemlock Forest."

Then Gramp said to Snuffy, "Where is your friend Snooper? Can you call him?" Snuffy understood every word. Then he gave a special squirrel squiffle call which those two squirrel friends used to call each other.

Very soon Snooper arrived on the high bank across the river. He scampered up a tree that leaned over the water and in no time at all was on our side of the river. He rubbed noses with Snuffy who must have told him something. Then both squirrels came over to Gramp who was holding out his hands. Snooper climbed up one arm, Snuffy up the other and they sat on Gramp's shoulders.

Mr. Johnson was so surprised. "Do you think they would come to me?" said he. Gramp said, "Let's try." He gave Mr. Johnson some Oregon walnuts and said to Snooper and Snuffy, "Go sit on Mr. Johnson's shoulders. He is a good friend to have."

The squirrels looked him over and then said, "O.K." in squirrel language. Next thing you know they were sitting on Mr. Johnson's shoulders. Their furry tails tickled his neck, but he was pleased to make friends of these beautiful big squirrels.

Suddenly Snuffy jumped down, dashed around the building and we saw him chasing two other squirrels across the bridge which leads to the Hemlock Forest. "I see him do that quite often," said Mr. Johnson, "and I think I know the reason why. He is as good as a watch dog would be."

Then he told us that when the workmen were rebuilding, they found a squirrel's nest in the old attic with four baby squirrels in it. It would be another month before they would be able to shift for themselves. One cruel man said, "Let's throw them into the river." The other man said, "Wait, let us ask the boss. He knows about wild animals." The boss came and looked and thought. Said he, "We could throw them out, but I haven't the heart to do that. And look at those parent squirrels pleading with me not to take their babies away. In another month they will be able to take care of themselves." Then he said to Snuffy, "You look like a smart animal," (Janet, you could have told him), "You and your mate are the only squirrels nesting on this side of the bridge. We can't have a restaurant outdoors and a lot of squirrels annoying people. When your children are big enough, I expect you to take them across the bridge to the Hemlock Forest and leave them there. After that we shall decide whether you will be allowed to stay in the new Snuff Mill building. Is that agreed?" Snuffy put his paw on his heart and promised.

Want to hear the rest of the story, Janet? All right. Here it is. When the baby squirrels were old enough to leave the nest, Snuffy and Sniffy went with them across the stone arch bridge to the Hemlock Forest. In a very short time the young squirrels learned how and where to get food, how to climb and take care of themselves. Then the parent squirrels said goodbye, left the young squirrels in the Hemlock Forest and came back to live in the rebuilt Snuff Mill, just under the roof.

Now, of course, your mother and daddy wouldn't think of putting their children out of the house, because home is so very important to humans. But it's different with wild animals. All outdoors is "home" to them, and they want to roam around and be independent as soon as they are able to look after themselves. So it wasn't cruel for Snuffy and Sniffy to put their children in the Hemlock Forest, because that is just where the children wanted to go.

After Snuffy came back from chasing those two strange squirrels across the bridge, Gramp invited him and Snooper to sit on his shoulders again. Then from his inside pocket he took a very good picture of Janet and held it where both could see it. Such excitement — and the noise those squirrels made! Said Snuffy, "chatter, chatter, chatter, Chanet" and at the same time Snooper was saying, "jabber, jabber, jabber, jabber, Janet."

"Did you hear that?" asked Mr. Johnson. "We sure did, and we have always said those are the two smartest squirrels in Bronx Park." Then it was time for Grandma and Gramp to go home. They said goodbye to Mr. Johnson and the squirrels including Sniffy, who was not so tame as the other two.

So that is why you will see only two squirrels about the Snuff Mill, except when Snooper pays them a visit and they are very well behaved. Snuffy always remembered what the man said about not wanting a lot of squirrels near the Restaurant, so whenever an inquisitive squirrel comes over to the Snuff Mill side of the river, Snuffy chases him right back across the bridge.

GRAMP

Note:—We should greatly appreciate it if our readers would be kind enough to drop us a line signifying approval or disapproval of this addition to The Garden Journal, for our future guidance.—THE EDITOR.

LATIN NAMES **(from page 43)**

We use the name *Anemone* (from the Greek *anemos,* wind) far more than the English equivalent, windflower; and the same is true of *Aster* (from the Greek for star). We seldom speak of the aster as starflower.

Calendula stems from the Latin *calends* or months and was given to this plant because it produces blooms every month of the year in the mild climate of the Mediterranean.

Campanula is the Latin diminutive of *campana,* a bell. The name is descriptive of the shape of the flower and is used almost as frequently as the English equivalent, bellflower.

Chrysanthemum comes from the Greek *chrysos,* gold, and *anthemon,* flower, literally flower of gold, a name of lovely cadence and graphic beauty that has never been improved upon in English.

Coreopsis has a less attractive meaning; it comes from the Greek *koris,* a bug, and *opsis,* resemblance—like a bug. The English name is tickseed, but is less familiar to gardeners than *Coreopsis.* Both names refer to the seed which suggests a bug.

Cosmos is, of course, from the same Greek root as our cosmos or universe. In Greek this root means order, and to the Greeks order was beauty. Cosmos, a thing of beauty, is certainly an appropriate name for this graceful and lovely flower.

Delphinium, which we use as often as we do larkspur, is derived from the Greek for dolphin, the flower having been thought to resemble the dolphin's crested head. Generally speaking, we distinguish between the annual and perennial sorts by calling the annual larkspur and the perennial delphinium, though both are *Delphinium.*

Because of its long-beeked seed, *Geranium* was named from *geranos,* the crane; in English, cranesbill. Its close relative, *Pelargonium,* was named from *pelargos,* the stork.

Gladiolus is derived from the Latin diminutive of *gladius,* a sword, referring to the sword-like foliage. It does seem odd to select the leaf as the name of a plant whose flower is so strikingly beautiful; but names have had to be found for many, many hundreds of flowers, and often the wild type, for which the generic name was created, is small and insignificant compared to the garden hybrids developed from it. It seems much more strange that no common name, other than the commercial "glads," has attached itself to so popular a flower. The equivalent of a common name might be the pronunciation gladiólus instead of gladíolus—either is correct.

Heliotrope describes a habit of the plant, *helios* meaning sun, and *tropos* a turn, turning towards the sun.

Nasturtium comes from the Latin *nasus,* nose, and *toquere,* to twist, referring to an acrid smell or nose-twister which does not apply to the delicately spicy flower we know as nasturtium. *Nasturtium* is rightly watercress. The true Latin name for the plant we call nasturtium is *Tropaeolum,* and is said to stem from the Greek root of our word trophy, referring to the shield and the helmet seen in leaf and flower. Somewhere along the line, gardeners got the two hopelessly confused, and confused they will very likely remain. We don't hear many gardeners say, "Come see my tropaeolums." Nasturtium, I suspect, is nasturtium for good and all.

And *Phlox* is phlox, with no known English name. Actually, *Phlox* is pure Greek for flame.

Petunia is Brazilian Indian, from *petun,* tobacco, to which the plant is related. The name was probably acquired from the natives by those who discovered this plant in Brazil.

At this point we might note that, although we commonly speak of the scientific names of plants as Latin, they are derived from Greek, Sanskrit, Arabic, Maylayan, Chinese, Japanese, and other languages including American Indian. All plant names are given Latin form and case endings, because the scientific knowledge of plants stems from the early Greek and Latin writings, the re-discovery of which in the late Middle Ages contributed to the Renaissance and the beginning of scientific inquiry in Europe. Latin was at that time the language of learning, and Latin or Latinized form was carried over into scientific terminology.

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THE NEW YORK BOTANICAL GARDEN
Bronx Park, New York 58, N. Y.

BOOK REVIEWS

HARDY RHODODENDRONS. Frederick Street. 192 pages, illustrated, indexed. D. Van Nostrand, New York. 1954. (Printed in Great Britain). $3.95.

This past season there have been presented for the use and enjoyment of American gardeners two new books on rhododendrons. The first, by Clement G. Bowers (who was trained at The New York Botanical Garden) has already won wide acclaim as a book of simple and clear instruction on how to grow rhododendrons in our eastern states. It does not attempt to go into the learned and more technical discussions of Dr. Bowers' earlier work on rhododendrons, a monumental work which, unfortunately, is no longer available except in libraries.

Now to add to Dr. Bowers' practical directions comes this new book by Mr. Street. It is entirely different and does not attempt to cover the same field. Written by a noted British authority, some supercilious American gardeners may feel it cannot be read in our Atlantic Coast states without a liberal sprinkling of salt. Indeed, Mr. Street has never been to this country to see how radically our climate (or climates!) differs from his. But while primarily intended for British readers and, therefore, suited also to the similar climate of our Puget Sound areas, its statements, drawn from a lifetime of experience, are of value to any gardener anywhere. By that I mean that Mr. Street presents the whole picture of the great genus *Rhododendron* in such a way as to point out which species can, and which cannot, be considered useful under the varying conditions of climate and soil which are to be found in this and other countries.

So much for the practical advice to be gleaned from the book. What seems to me more important is that Mr. Street has given us a background not merely of botany and of horticulture, but of the fascinating history of the rhododendron—how it came into cultivation, who first tried to produce superior flowers by hybridization and selection, what kind of people they were and how they succeeded or failed with their self-appointed tasks.

Some of this he may have gotten from old books, just as other researchers have slowly dug it out of libraries, but most of it came to him from his natural background. He grew up in a famous nursery specializing in rhododendrons. He was a near neighbor, as his father was before him, of the Waterers, the Rothschilds, the Stevensons, and other famous British rhododendron breeders, growers and devotees.

From this background he spins a fascinating story worthy to be placed alongside of Farrer's *On the Eves of the World* and *The Rainbow Bridge.* It is a story that no real gardener will be able to put down once he has opened it. I recommend it not only to American rhododendron growers east and west (may their tribe increase!), but to anyone who loves plants and enjoys the beauty of flowers.

JOHN C. WISTER
Arthur Hoyt Scott Horticultural Foundation
Swarthmore. Pa,

THE FLOWERING CACTUS. Edited by Raymond Carlson. 96 pages, photographs and technical data by R. C. and Claire Meyer Proctor; sketches and design by George M. Avey. McGraw-Hill, New York. 1954. $7.50

This is a very handsome volume with such breath-taking color plates that they stand in a class by themselves. For excellence in registration, in definition of detail and in fidelity of color, there are no reproductions of color photographs which can match them.

As subjects the flowers of cactus are exceptional. They have striking colors, interesting forms, and sometimes a great multiplication of petals and stamens to form patterns with infinite detail. There is often a marked contrast between the harsh, spiny, almost monstrous appearance of the plant itself and the delicate, lacy texture of the beautiful flowers. The association of grace and beauty with the rugged plant that produces it calls to mind the jewel in the head of the toad, *vide* Shakespeare.

This book contributes most through the medium of illustrations. The restricted text is inadequate to do more than skim over the surface and the quality of factual presentation varies greatly. The introductory section has a "journalese" flavor that is out of character in such a book and actually misleads at times. "Flowering" is inseparably linked with cactus, as if this was something unique or that cactus without flowers are beyond consideration. Our southwestern states are assigned a much greater importance in the distribution of cactus than is actually the case. The taxonomic treatment at the close of the book has some surprising "coined" common names and this illuminating statement:

> "There are today three systems of technical cactus nomenclature. Any one is considered correct, or a mixing of the three systems, where a writer chooses."

This book is recommended without reservation as a splendid pictorial display of "flowering cactus." The text does not come up to the high standard set by the pictures.

HAROLD E. ANTHONY, *Deputy Director*
The American Museum of Natural History

PIERRE-JOSEPH REDOUTE. ROSES. Selected and introduced by Eva Mannering. XV pages text; 24 plates in color. British Book Centre, New York. 1954. (Printed in Germany.) $8.50

This is an attractive picture book of twenty-four color reproductions of Redoute's roses, selected by Miss Mannering. and introduced by her very brief forward giving the highlights of the artist's life and his publications.

One sentence reads: "The conditions which made possible a work like 'Les Roses' (Redouté's original folio volumes of 170 plates) exist no longer, nor do the roses themselves as they are illustrated in this book." This last phrase is not entirely accurate. For instance, the double pink moss rose (the seventh plate here) not only exists, but is available commercially at Will Tillotson's gardens in Watsonville, California. So also is the third plate, *Rosa Damascena* var. *Celsiana,* from the same source.

The volume measures 12x16 inches with wide margins. The color of the reproductions is sensitive and exact, and a great pleasure to see. They were printed in Germany.

The descriptions of the twenty-four roses are taken from the original French text by Thory. Though interesting historically, these might have been more useful in English translation.

FANNY W. PARSONS
New York, N. Y.

WILD FLOWERS AND HOW TO GROW THEM. Edwin F. Steffek. 192 pages, illustrated, indexed. Crown Publishers, New York. 1954. $3.95.

This is the book for which wild flower gardeners have been waiting. Here we find not only descriptions of plant and habitat but intimate, informal, yet authoritative discourse on how to grow each one. The horticultural challenge of growing native plants will be met more easily with the very real assistance of this book. Little pitfalls to be avoided are described and the exactness of the "how to do" makes you know that the author personally has done these things.

The subjects are arranged alphabetically by common name, making it an easy reference book for the novice. This is not a field guide for identification (although identification should not be difficult with the aid of the beautiful color plates)—nor is it filled with botanical terms. The descriptions are in simple familiar language. You feel as if you were walking in the woods with someone telling you interesting factual bits about each plant. It is the kind of lore handed down to one naturalist by another steeped in experience.

Mr. Steffek has a very realistic approach to the subject of "Conservation" in his belief that one of the best ways to conserve native plants is to learn how to establish stands of them.

I can find nothing I would like to change or improve in this book and am most enthusiastic in its praise.

ESTHER M. P. BURT
Park Ridge, N. J.

GARDENING FOR COLOR. William H. Clark. 212 pages, indexed. Little, Brown & Co., Boston, Mass. 1954. $2.95

Gardening for Color is a small book, but it is packed fuller of general gardening information in addition to that of color than many larger volumes.

The author frankly states that success in working out color schemes is not achieved the first year nor the second, but makes the problem so fascinating that one is impelled to start at once on his own garden. He stresses that the basis of any successful garden is a thorough knowledge of plant material, habit of growth, ultimate size, and time of flowering, as well as color of flower and foliage. In the beginning, it might be more satisfactory to work with "island plantings of combinations of colors," with plenty of green foliage, and with annuals as it is cheaper and easier to make changes each year until the desired effect is attained.

The chapter on color states color does have an effect upon the human mind, but this effect varies with the individual; no two people see a given color exactly the same. Mr. Clark discusses at length the difference in effect upon different people

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and the difference of various environments upon the same color. His advice is to experiment for yourself until you get the result *you* like, for it is *your* garden.

Later chapters contain detailed information about the selection and lists of trees and shrubs, including evergreens; annuals and perennials; bulbs from early spring to fall; for combinations throughout the season; when to plant, whether in shade or sun, or in acid or alkaline soil, and care after planting; also lists of material for winter interest in way of color of bark and fruits, formation of limbs and twigs.

IDA A. THOMAS
Garden Consultant
Paterson, N. J.

THE PRUNING MANUAL. Everett P. Christopher. 320 pages, illustrated, indexed. Macmillan, New York. 1954. $5

Here is a book that can be recommended without hesitancy. While based upon *The Pruning Manual* of Dr. L. H. Bailey, written a half-century ago, the present work goes far beyond the scope of that classic. Seemingly pruning has become both an art and a craft during the intervening years. The reader will be impressed with the extent to which this oldest of horticultural arts has become specialized, and the special equipment which has been developed. There are chapters dealing with all the commercial fruit trees; another devoted to grapes, still others to shrubs, shade and ornamental trees, nut trees, small fruits and roses. It is a complete manual on the subject. It covers pruning in great detail, then goes far beyond, guiding the pruner through plant anatomy and growth. Thus it provides a sound foundation for every pruning cut. There is a chapter on grafting which should be of interest to the serious amateur; another deals with pruning practices in the nursery. This too should be of value to the amateur as a purchaser of woody plants, it is a yardstick by which the relationship of quality to price might be measured.

Generally a technical work requires a lengthy list of substantiating titles, but here there is no bibliography! The author thus assumes full responsibility for his statements—a bold and courageous innovation! Actually a long bibliography would add little to the excellence of the book. The technical worker should know the literature, or should know where it might be found, and the amateur has no interest beyond the confidence he learns to place in the author.

It is a book for the amateur, the advanced grower, the professional gardener and the serious student. It will in no way detract from Dr. Bailey's reputation to say that here is a worthy successor to his manual. It should enjoy a similar reputation.

AUGUST P. BEILMANN
Missouri Botanical Garden Arboretum
St. Louis, Mo.

BULB MAGIC IN YOUR WINDOW. Ruth Marie Peters. 214 pages, illustrated, indexed. M. Barrows, New York. 1954. $3.95

Imagine having beautiful blooms from bulbs in your home throughout the entire year. Picture for yourself not only flowers from the more common bulbs such as narcissus, tulips, lily of the valley—but blooms from the lesser known, *Haemanthus multiflora* (blood lily) *Vallata, Cyrtanthus,* and *Smithiantha.*

For window gardeners who are interested in indoor bulbs, this is the book. It is full of information, not only as to species but complete instructions on soil, light, temperature and, in fact, the eight basic factors required for all plants raised in the home.

The author uses intriguing titles for her eleven chapters: "The Key to Magic," "Wizardry with Water," and "Pushbutton Sunlight." She tells how to have a bulb garden for a dime, or for several dollars; when to start the hardy and tender kinds for a planned display and for top condition for show; she explains moving of the pots at night from their daytime positions to the temperature best suited for them, thus giving them a longer period of bloom.

In Chapter Eight there is a helpful list of bulbs that can be grown together in the same window and the various degrees of temperature best suited for them. There is a list for scheduled blooms in each month, so, through proper timing, there will always be an array of colorful and sometimes sweetly scented blooms.

There are three pages of color and sixty black and white photographs.

This is indeed a book for the indoor gardener.

MARY F. JOHNSON
Pompton Lakes, N. J.

PHOTOGRAPHING YOUR FLOWERS. John P. and Mary A. Roche. 125 pages, illustrated. Greenberg, New York. 1954. $3.75

If this book receives the attention it deserves, it may bring about a decided uplift in the quality of flower photography. Advice on basic equipment, materials and processing precedes a detailed discussion of the use of the camera in gardens and for outdoor floral subjects generally, including close-ups.

Then, having taken the camera to nature, the latter part of the volume deals even more effectively with bringing nature to the camera. Special problems in the indoor photography of flowers include the use of artificial lighting, backgrounds, and the physical handling of flowering material brought in from the outdoors. Throughout the work the authors have considered both the artistic and the technical, and color as well as black and white. The book is profusely illustrated with more than one hundred of the authors' monochrome photographs which, for the most part, are presented in excellent halftones; the few color reproductions leave something to be desired.

The qualifications of the authors and their enthusiasm for their chosen work is apparent throughout. As the title indicates, and as should be expected from the approach, the work deals primarily with the photography of garden flowers and horticultural subjects. However, the intrepid soul who prefers to photograph nature's blossoms in remote bog, barren, forest or mountains, is advised that even he may profit immeasurably from the Roche technique. The basic principles of camera placement, effective lighting, correct exposure, background, composition, and the like, remain unchanged and will need but slight adaptation to fit the changed environment.

RAYMOND D. WOOD
Mt. Kisco, N. Y.

FARMING WITH NATURE. Joseph A. Cocannouer. 147 pages. University of Oklahoma Press, Norman. 1954. $2.95

Farming With Nature is a very timely book for the farmer or gardener who is endeavoring to build up his soil. It will give him a clearer picture of its care so as to help him bring it to a high state of fertility.

The author of this volume, while stressing the importance of organics in the form of compost, green and animal manure, is not one of the extreme school of organic gardening. For through his vast studies of the soils and their requirements, he has rediscovered what old world gardeners have practised for years — a proper balance of organics in the soil; and he also points out the value of chemical fertilizers when properly applied.

The chapters on the value of deep rooted weeds and earthworms in the soil, I have found most interesting. I am sure the adventurous gardener will want to study their value more thoroughly, as well as other less common practices which the author advocates.

I feel that the farmer or gardener cannot help but have a greater understanding and deeper respect for the soil after reading this small volume.

STEPHEN G. CUTTING
Ossining, N. Y.

FOOD FOR PEOPLE. Sarah R. Riedman. 192 pages, illustrated by Helen Ludwig; indexed; foreword by Lord John Boyd Orr. Henry Schuman, New York. 1954. $2.50

An elementary consideration of food considering its primitive history, the advances leading to its scientific study, its manufacture, and synthesis by plants, the classes and uses of foods, minerals and vitamins, its digestion, and use by the body.

The amount of food needed, balancing a diet, the present world supply of food and the outlook for the future make up the balance of this 184 page book which if read by a child would help him understand why parents insist on his eating something besides hamburgers and coke.

ROMAINE F. BUTTON
Board of Education
Office of Nature Study & School Gardens
New York City

(Continued on page 66)

Publications of THE NEW YORK BOTANICAL GARDEN

Books, Booklets, and Special Numbers of the Journal

The New Britton and Brown Illustrated Flora of the Northeastern United States and Adjacent Canada by H. A. Gleason and collaborators. Over 4,660 species described; each species illustrated; keys to families, genera, species; a complete glossary. 3 vols., $30.00, plus 75c handling and postage on domestic orders; foreign orders, full postage.

Flora of the Prairies, and Plains of Central North America, by P. A. Rydberg. 969 pages and 601 figures. 1932. $6.

Plants of the Vicinity of New York, by H. A. Gleason. 284 pages, illustrated. A handbook especially compiled for the beginner. 1935. Second edition 1947. $2.

The Bahama Flora, by Nathaniel Lord Britton and Charles Frederick Millspaugh. 695 pages. Descriptions of the spermatophytes, pteridophytes, bryophytes, and thallophytes of the Bahamas, with keys, notes on explorations and collections, bibliography, and index. 1920. $6.25.

North American Cariceae, by Kenneth K. Mackenzie, containing 539 plates of *Carex and* related plants by Harry C. Creutzburg, with a description of each species. Indexed. 1940. Two volumes, 10¾ x 13½ inches; bound $17.50. Foreign postage extra.

Keys to the North American Species of Carex, by K. K. Mackenzie. From Vol. 19, Part 1, of *North American Flora.* $1.25.

Plants of the Holy Scriptures, by Eleanor King, with a check-list of plants that are mentioned in the Bible, each one accompanied by a quotation. Revised from the Journal of March 1941. 23 pages, illustrated. 1948. 25 cents.

Food and Drug Plants of the North American Indian. Two illustrated articles by Marian A. & G. L. Wittrock in the Journal for March 1942. 25 cents.

Vegetables and Fruits for the Home Garden. Four authoritative articles reprinted from the Journal, 21 pages, illustrated. Edited by Carol H. Woodward. 1941. 25 cents.

The Flora of the Unicorn Tapestries, by E. J. Alexander and Carol H. Woodward. 28 pages, illustrated with photographs and drawings; bound with paper. 1941. Second Edition 1947. Third Edition 1950. 25 cents.

Catalog of Hardy Trees and Shrubs. A list of the woody plants being grown outdoors at The New York Botanical Garden in 1942, in 127 pages with notes, a map, and 20 illustrations. 75 cents.

Succulent Plants of New and Old World Deserts, by E. J. Alexander. 64 pages, indexed. 350 species treated, 100 illustrated. Bound in paper. 1942. Second edition 1944. Third edition 1950. 50 cents.

Review of Juniperus chinensis, et al., by P. J. van Melle. A study of the many varieties and forms of *Juniperus* which have been commonly included in the concept of *J. chinensis.* 108 pages, illustrated, bound in paper. 1947. $2.00.

Periodicals

The Garden Journal of The New York Botanical Garden, bimonthly, designed to stimulate interest in the world of plants and the science of plant life, contains non-technical articles on botanical, horticultural and kindred subjects; also special departments — book reviews, questions and answers, news and comments. $2.00 a year, 35c single copy. Foreign subscription $2.50 a year.

Addisonia, devoted exclusively to colored plates accompanied by popular descriptions of flowering plants, 8 plates in each number, 32 in each volume. Published irregularly. Subscription price $10.00 a volume; not offered in exchange. Free to members of the Garden. Volume 23, No. 1 published November 5, 1954; Volume 23, No. 2, to be published November 6, 1955.

Memoirs of The New York Botanical Garden. A collection of scientific papers, issued irregularly. Vols. 1-6, to members of the Garden, $1.50 a volume; to others, $3.00. Vol. 7, to members, $2.50; to others, $5.00. Vols. 8, 9, $10.00.

Contributions from The New York Botanical Garden. A series of technical papers reprinted from journals other than the above, 1899-1933. 25 cents each, $5 a volume. List of separate titles on request.

North American Flora. Descriptions of the wild plants of North America, including Greenland, the West Indies, and Central America. 100 parts now issued. Now in a second series. Not offered in exchange. Prices of the separate parts on request.

Brittonia. A series of botanical papers published in cooperation with the American Society of Plant Taxonomists. Subscription price of volumes 1-5, $5 a volume ($4 to members of the Society); volumes 6-8, $7.50 a volume ($5 to members of the Society). Now in its eighth volume.

Mycologia, bimonthly, illustrated in color and otherwise; devoted to fungi, including lichens, containing technical articles and news and notes of general interest. Official organ of the Mycological Society of America. $7 a year; single copy $1.50. Now in its forty-seventh volume. Beginning with Vol. 46, for 1954, subscription $8.50 a year, single copy $1.75.

NOTE: The price per copy of back numbers of the Journal is 25c; of back numbers (more than one year old) of The Garden Journal, 45c

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THE NEW YORK BOTANICAL GARDEN Bronx Park, New York 58, N. Y.

NEWS, NOTES and COMMENTS

Second Annual Downtown Evening Lecture Series. The New York Botanical Garden offers a course of evening lectures on "How to Plan and Plant Your Grounds" conducted by T. H. Everett, Curator of Education and Horticulturist, and presenting Arthur F. Murphy and Miss Nelva M. Weber, landscape architects, and an outstanding panel of experts, at the French Institute Building Auditorium, 22 East 60th Street, New York City, on six consecutive Thursday evenings. The dates are: March 16, 23, 30; April 6, 13, 20. The lecture is from 7:30-8:30 p.m.; discussion from 8:30-9:30 p.m. The fee for the entire series is $7.50 for members; $10.00 for non-members. Registration for the series, accompanied by remittance, should be made in advance with The New York Botanical Garden, 22 East 60th Street. New York City.

The program follows: March 16, "Your Garden Plan," a general discussion of the importance of planning with specific instructions on how to prepare practical and economical plans for various sites, by Mr. Murphy; March 23, "Preparing the Site," draining, grading, preserving topsoil, disposition of excavated material; installation of driveways, terraces, curbs, etc.; filling and cutting around trees, by Mr. Murphy; March 30, "Foundations and Boundaries," the use of plant material as a complement to the house—a new kind of "foundation planting;" planning boundaries for privacy and enjoyment; uses of hedges, screens and windbreaks, by Miss Weber; April 6, "Flower Gardens," the design of small flower gardens with up-to-date suggestions for using perennials, annuals, bulbs, and roses to achieve original effects, by Miss Weber; April 13, "Fruits and Vegetables in the Landscape Plan," attractive fruit and vegetable gardens designed as an integral part of the home grounds, by Miss Weber; April 20, "Plants for Today's Gardens," a presentation of some of the best plants to use in mid-twentieth century gardens. A general discussion and review of the subject matter of previous lectures, by Mr. Murphy.

Mr. Murphy, landscape architect of the New York City Park Department, has had wide experience in the design of both small and large public and private properties; for several years he has instructed courses in landscaping at The New York Botanical Garden.

Miss Weber is well known as a designer of private gardens; she is a popular lecturer and has written many articles for magazines and newspapers.

Dr. M. Awad, Egypt's former Minister of Education and President of Alexandria University, and currently a member of the executive board of UNESCO, is greeted by A. C. Pfander, Administrator of The New York Botanical Garden. Dr. Awad inspected the research work of Dr. M. Shawarbi (on the extreme left), Egyptian Fulbright scholar, who is working with Professor Michael Cefola of the Chemistry Dept. of Fordham University and with Dr. P. P. Pirone, Plant Pathologist of The New York Botanical Garden. They are cooperating in the investigation of the effects of supersonic waves on seeds and on plant diseases.

The Second Annual Downtown Evening Lecture Series is sponsored by the Volunteer Associates of The New York Botanical Garden, of which Mrs. James C. Brady and Mrs. John G. Winchester are Co-Chairmen. Mrs. Inglis F. Frost is Program Chairman.

Garden Club Affiliate Day. April 13 has been selected as Garden Club Affiliate Day at The New York Botanical Garden. Our first two events of this nature—April 1954 and October 1954 appealed so much to the members of our garden club affiliates that we are delighted to repeat the event. It is planned to visit the Easter Show in the morning, then retire to the Lorillard Snuff Mill for a question and answer period following which luncheon may be obtained in the Lorillard Snuff Mill Restaurant.

Elizabeth Sherman Lindsay Fund. In accordance with the trustee agreement created for the benefit of Elizabeth Sherman Lindsay, the United States Trust Company of New York, as Trustee, distributed, upon her death, the principal of the property held under the agreement. The New York Botanical Garden received $12,500 in January 1955; $10,000 is to be set aside as the Elizabeth Sherman Lindsay Fund, the income of which is to be used for the care, maintenance, and improvement of the collection of trees and shrubs of the Garden. The remaining $2,500 is to be used for the above purpose at the discretion of the Director.

Elizabeth Sherman Lindsay was Lady Lindsay, wife of Sir Ronald Lindsay, at one time British Ambassador to the United States.

Home makers found the answers to their problems in growing house plants at the show, House Plants–Their Care and Culture, in the Conservatory of The New York Botanical Garden, January 28-February 13, 1955.

Botanizing in the "jungle" can be a comfortable experience in the Brazilian State of Amapa. "This has been a very comfortable bit of field work, for right in the heart of the jungle sits this very pleasant camp. The guest house is on the river bank, a few feet up the slope, and is a low sprawling frame building surrounded on all four sides by a covered verandah. My room—equipped with closet, work bench, table, chairs and bed—is especially pleasant because it overlooks the Rio Amapari and across the river to the hills.The camp is situated about one hundred and thirty-five miles north and a little west of the town of Mocapa. They have dammed up a small stream and pump from the small lake resulting for their water supply, so we have running water. And we have electricity in the camp, too, for there is an electrical plant here.

"The food is served in a central mess hall and is both abundant and well prepared, though lacking in fresh fruits and vegetables. I have had papaya a few times.

"I have an assistant, a young man assigned to me by the governor for two reasons. He is supposed to be my "man Friday," but his second function is to act as official government observer to avoid (the governor said) any talk that a possible Communist might be roaming the country!

"There is no end to the hospitality. My every wish is fulfilled for labor, supplies and everyday needs. As there is radio contact between here and Macapa, anything needed is speedily obtained.

"I have collected nearly six hundred numbers, representing perhaps two hundred species or more. The total number of specimens will fall between twelve hundred and fifteen hundred.

"There have been two distinct disadvantages to the work, as you may already have heard from Dr. Maguire. First, we had assumed the flora was a natural extension of the flora in the Guianas. This is not at all true, for it is (or so appears now) to be Amazonian in its affinities. This has been a real obstacle, because most of the plants are unfamiliar, generically even. Then we had been informed—or had assumed with some corroboration—that now (November) is the good flowering season. On the contrary, it is the worst. The height of flowering is in April and May. So I have much fruiting material, and flowering specimens of plants which bloom now rather than at the peak. And still another difficulty—in the best collecting places they have cut off everything but large trees. However, I have been able to collect in several undisturbed areas where outcrops occur.

"I have found a few Composites — and these rather weedy like *Mikamia,* several Apocynaceae and Sapotaceae, numerous aroids and, I suppose, more Melastomaceae than any other family. I believe Dr. Maguire will be excited over three rapates (members of the localized family Rapateaceae) that I found after he left. A new *Persea* has been collected. Yesterday's collection yielded a *Dioscorea* in very nice condition and two earlier collections may be in this genus.

"I have not gotten a single cactus yet, although I have seen sterile along the river a leafless, terete-branched epiphyte which I take to be of this affinity and at least two species of *Rinorea.*"

RICHARD COWAN

Garden Symposium at Colonial Williamsburg. The Garden Symposium at Colonial Williamsburg, Williamsburg, Va., will honor two botanists of the eighteenth century, in March.

T. H. Everett, Curator of Education and Horticulturist of The New York Botanical Garden, will deliver the address at the John Custer banquet on March 10. Mr. Everett's subject will be "Plants in Tomorrow's Design." The address at the John Clayton banquet on March 17 will be given by Garrett Eckbo, landscape architect of Los Angeles and San Francisco. He will speak on "Living with Gardens."

The Symposium, sponsored by Colonial Williamsburg and "Flower Grower" is scheduled for two three-day sessions, March 9-11 and March 16-18.

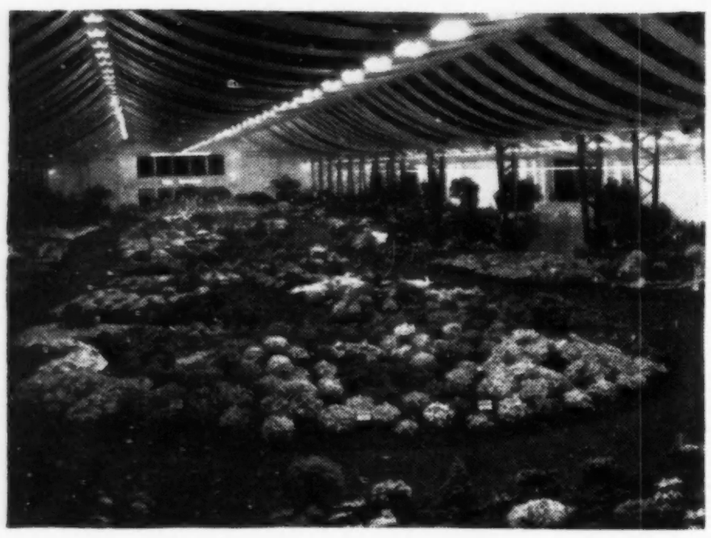
Spring Showing of City Gardens. The City Gardens Club will hold its annual Spring Showing of Gardens and Penthouse Terraces on the afternoons of May 3 and May 10, between 2:30 and 6 o'clock. Further information regarding the gardens to be shown may be obtained from the City Gardens Club, 829 Madison Avenue, New York 21, N. Y., telephone number TRafalgar 9-0173, between ten a.m. and one p.m.

Part of the fund so raised supports the club's conservation education program. This includes giving to New York City teachers scholarships for the Audubon Nature Camps and supplying natural science teaching aids for classroom use. The club's experience has shown that the children who learn about "the world around them" develop a desire to take care of parks and other public property, and it hopes in this way to encourage good citizenship.

European Floral Festivals Tour. Can you conceive of a more delightful prospect than visiting notable garden spots in England and on the continent under the leadership of T. H. Everett, Curator of Education and Horticulturist of The New York Botanical Garden? Mr. Everett, with his wide horticultural experience abroad and in this country, his many personal contacts with private and public gardens, will be an inimitable guide and interpreter on matters of import to those who participate in the European Floral Festivals Tour.

Members of the tour will leave International Airport, New York, on the Sabena Belgian Airlines on April 21 and will return to New York, at the same airport, on May 28. (Arrangements may be made for steamship transportation for those who prefer that means of travel.) In the period intervening they will visit the Quinquennial Florailes at Ghent, Belgium, and the Chelsea Flower Show in London, England. In addition to these floral spectacles, they will see the tulip fields in Holland at the

At the Chelsea Flower Show in London, England, there are elaborate rock gardens and other gardens outdoors, and many exhibits under tents.



Above. The Queen Mother visits the Chelsea Flower Show, accompanied by the President of the Royal Horticultural Society, the Hon. David Bowes-Lyon.

Left. "The Gardeners' Chronicle" (England) in describing the 1950 Quinquennial Florailes, Ghent, Belgium, stated: "For the amazingly beautiful glory of color, no exhibition with which we are acquainted can compare with the Ghent Florailes."

peak of bloom, the formal gardens at Versailles, Fontainbleau, and the Tuilleries; the alpine flowers of Switzerland, the colorful plantings on the Riviera, and the world-famous Royal Botanic Gardens at Kew, Hampton Court, and Wisley.

The tour also includes visits to art museums, castles, cathedrals, and receptions and dinners by city officials. It is sponsored by Raymond Whitcomb, Inc., and Columbia Travel Service, and full details may be had from European Floral Festivals Tour, 600 Fifth Ave., New York 19, N. Y.

Dr. Robbins Returns from Pakistan. Dr. William J. Robbins, Director of The New York Botanical Garden, returned from Pakistan on February 8—just as this issue of The Garden Journal was about to go to press, so we must wait for an account of his trip for a later issue. Dr. Robbins attended the Seventh Pakistan Science Conference at Bahawalpur, Pakistan, representing the National Academy of Sciences of the United States. In addition to participating in the Science Congress, he was at Lahure, Rawalpindi, and Karachi. Dr. Robbins delivered eight lectures at colleges and universitites, attended scientific meetings, and visited teaching laboratories and research institutions.

Annual Members' Day. A large gathering attended Annual Members' Day, sponsored by the Board of Managers and the Volunteer Associates of The New York Botanical Garden, at the French Institute Building on February 10, 1955. Dr. John F. Enders was guest speaker, and his subject, "Random Remarks on Certain Viruses and Their Behavior." Dr. Enders is Chief of the Research Division of Infectious Diseases at the Children's Medical Center, and Associate Professor of Bacteriology and Immunology at Harvard Medical School, Boston.

On December 10, 1954, King Gustav I of Sweden presented the Nobel Prize in Medicine and Physiology to Dr. Enders, Dr. Frederick Chapman Robbins, son of the Director of The New York Botanical Garden, and Dr. Thomas H. Weller, for their joint investigation resulting in the discovery of a method of growing polio virus, which made it possible to expedite the Salk polio vaccine program.

Rose Proposed as National Flower. Senator Margaret Chase Smith of Maine and Representative Frances P. Bolton of Ohio introduced a resolution into the Senate and House of Congress of the United States, respectively, on January 10, 1955, that the rose be designated and adopted as the national flower of this country.

On February 9, Mrs. Mildred F. Taylor, member of the New York State Assembly from Wayne County, proposed that the rose be made the official flower of New York.

The wild rose is now the state flower of Iowa, the prairie rose the state flower of North Dakota, and the "American Beauty" rose the flower of the District of Columbia.

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Except on Sundays

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"Widening Horizons." This is the title of the ninth annual flower show of the Gramercy Park Association to be held at the National Arts Club, 15 Gramercy Park, New York City, 2 p.m.-10 p.m., April 20, and 10 a.m.-10 p.m., April 21.

BOOK REVIEWS (from page 62)

THE WEB OF LIFE. John H. Storer. 144 pages, illustrations, bibliography. Introduction by Fairfield Osborn. Devin - Adair, New York. 1953. $3.00.

Mr. Storer, well-known for his bird and conservation motion pictures, has consolidated his lifelong observations on nature into a simple interesting account of elementary ecology. The book includes brief discussions of the role of the surrounding environment, the living communities, and human influence on nature. Examples are drawn from such familiar areas as Okefenokee Swamp and the Grand Canyon, as well as a cedar plantation near Athens, Ohio, and a government experiment station in southern Arizona.

An introduction by Fairfield Osborn and a series of excellent photographs add further merit. *The Web of Life* is recommended for young high-school students as an introduction to our outdoor heritage and conservation responsibilities.

J. J. WURDACK

FLOWER ARRANGING FOR JUNIORS. Virginia Stone Marshall. 113 pages, illustrated by the author. Little, Brown & Co., Boston, Mass. 1954. $2.75.

Now that flower arranging and flower shows for Juniors are really coming into their own throughout the United States, books covering these interesting activities are most welcome. This author has not only a great imagination and a real technique in presenting the elements and principles of design, but also a good sense of humor and a real understanding of the art of flower arranging. In a modest way her book is presented as an adequate introduction to the Juniors on the subject of flower arranging and, in my opinion, should fill a now existing gap on library shelves.

The undaunted Virginia Stone Marshall undertakes very well to bring this art to a child's level. The marvel is that she portrays all of the desired knowledge through nursery rhymes and leaves a definite and clear impression with the reader.

One by one the elements and principles of design and flower arranging are fully described in the book.

The index of contents, well drawn pictures, do's and don'ts for entering a flower show, and definitions add to this book's value.

VIVIAN ANDERSON MANUEL
Garden City, N. Y.

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Departure via Sabena Airlines, April 21, 1955; return, May 28, 1955. Price $1379. Steamer accommodations available in Cabin and First Class at slightly higher rates.

Descriptive brochure will be sent upon request to . . . .

European Floral Festivals Tour

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HOW TO MAKE A HOME NATURE MUSEUM. Vinson Brown. 214 pages, illustrated by Don Greame Kelley; indexed. Little, Brown & Co., Boston, Mass. 1954. $2.50.

This book is a logical sequel to the same author's *Amateur Naturalist's Handbook.* Once one starts to collect nature specimens, there is always the problem of how to display and store them. *How to Make a Home Nature Museum* describes the correct methods of displaying all kinds of nature collections such as fossils, soils, plants, rocks and minerals, insects, birds and other animals. It would be of particular value to leaders of nature clubs and camps, to schools and to those who just like to "collect."

Mr. Brown, the author, is certainly helpful to the amateur museum-maker in stressing the importance of accompanying charts or diagrams. Too often we think of museum collections as just a group of specimens. This book is most explicit in how to display a collection so that it tells a story. There are many detailed drawings of shelves, cases, and drawers as well as individual models, molds, and various tools that help to clarify instructions given in the text. From Mr. Brown's suggestions, the amateur should be able, with a little practice, to achieve a professional appearance in his display cases.

The modern museum tends to set up landscape scenes in which to show plant or animal collections. *How to Make a Home Nature Museum* tells in detail just how to go about making such an exhibit. Plaster, rubber and wax models and pâpier-maché work are described and many helpful hints given to gain a realistic looking setting for specimens. The book includes a group of appendices which provide information on where to get supplies, ideas for exhibits and a list of books on natural history.

ELIZABETH A. PULLAR
New York, N. Y.

THE FERNS AND FERN ALLIES OF MINNESOTA. Rolla M. Tryon, Jr. 166 pages, illustrated by Wilma Monserud; indexed. University of Minnesota Press, Minneapolis. 1954. Paper bound $2.75; cloth, $4.00.

This is the latest addition to the growing list of state fern floras. The genera and species are listed systematically with keys and brief but adequate individual discussion. In some cases the nomenclature follows the eighth edition of Gray's Manual, in others the third edition of Britton & Brown's Flora; synonyms are added parenthetically.

A notable feature is the excellence of the illustrations. Many of the taxa are shown in silhouette, often supplemented by drawings (by Wilma Monserud) which are both accurate and elegant. The distribution of each taxon in the state is shown by dots on outline maps; these are primarily based on specimens in the herbarium of the University of Minnesota, though supplemented by credible published records.

The text was proof-read, and few typographical errors escaped correction; occasionally there seems to be some discrepancy between text and plate data, but this is not serious. The book is a credit to author, artist, and publisher, and should be in every fern student's library.

EDGAR T. WHERRY
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LET THERE BE HERBS

The first signs of the greening of spring can be found in the grass of marshy spots in the meadows and along roadsides. In the real country, where the word "spring" can mean cold, clear water gushing up through sand, even when all the rest of the ground is hard-frozen and snow-covered, all that is green around a "spring" may not be grass. By chance, the rich emerald rim about the sparkling water may consist of watercress plants. From January on, the rounded peppery-tasting leaves of watercress are ready for picking.

It is well to take a knife to gather watercress, for stems cut below the water line—but above the roots—will mean less washing for the cook; also, pulling up the plants, when the first bunches are gathered, leaves holes in the watercress patch. If carefully cut, the plants may produce enough tops to permit a mess of that most piquant and verdant of all spring greens, cooked watercress.

If you know a stream where "the watercress grows" gather a lot. It will go to seed anyway and disappear with hot weather. Cutting does not hurt the spreading perennial roots. Just don't pull it up to collect the tops. Dried watercress retains many of the vitamins of the fresh herb. For soup or cooked greens, watercress is par excellence. A real spring tonic of our elders, we find that biochemists are discovering why —watercress is high in vitamins A, B, C, E and G plus a whole list of minerals, including twice as much iron as spinach.

An English magazine suggests saving a bunch bought at the green grocer's and letting it root in water until ready to plant —but you have to have moving water to make watercress really happy. Seed should be planted when fresh in August.

CHINESE WATERCRESS SOUP
2 quarts chicken stock
¼ lb. lean pork
3 bunches watercress
one egg
salt

Slice lean pork into thin pieces, put into chicken stock, bring to boil, and simmer for fifteen minutes. Wash watercress and put into soup uncut. Bring soup to boil and cook for ten minutes. Beat egg slightly and add to soup. Cook only one minute longer. Americans would no doubt prefer the watercress chopped fine first.

GERTRUDE B. FOSTER

Naturalist's Directory. The 37th edition, recently published, is helpful to all who are interested in nature study in any of its branches. $5.00 postpaid. The Naturalist's Directory, 720 Filmore Road, East Meadow, New York (formerly at Salem, Mass.).

HOUSE PLANTS FOR EVERY WINDOW. Dorothy H. Jenkins and Helen Van Pelt Wilson. 238 pages, illustrated, indexed. M. Barrows, New York. Ninth printing, revised, 1954. $2.95.

For ten years *Enjoy Your House Plants* was a very popular book; now it has been completely revised and in its ninth edition, brought out under the new title as given above. The two authors, Dorothy H. Jenkins, Garden Editor of *The New York Times* and author of several garden books for children as well as adults, and Helen Van Pelt Wilson, likewise author of several garden books, know whereof they speak. Their do's and don'ts are based on their experiences in growing many kinds of house plants in their own homes.

THE ARNOLD ARBORETUM GARDEN BOOK. Donald Wyman. 354 pages, illustrated, indexed. D. Van Nostrand, New York. 1954. $5.95.

Forty articles from "Arnoldia," the popular bulletin of the Arnold Arboretum have been gathered into an attractive book. Subjects range from propagation, pruning, mulching, labeling, to discussions on rhododendrons, roses, azaleas, lilacs, forsythias. In addition, Donald Wyman, Horticulturist of the Arnold Arboretum, Karl Sax, George Graves, Charles F. Jenkins, and others have written on their specialties.

PLANT REGULATORS IN AGRICULTURE. H. B. Tukey (editor). 269 pages, illustrated, indexed. John Wiley & Sons, New York. 1954. $5.50.

The present work is one of at least four books which have been issued since 1947, dealing with similar subject matter — the use of plant regulators in the general field of agriculture. The present work traces the history of the demonstration and chemical identification of growth regulators in plants, but leaves much to be desired as to the historical sequence of their use and application in the field of agriculture. Few references are made to some of the older pertinent experiments.

The results of individual experiments and attempted somewhat oversimplified explanations of the results from them are given. The book will prove very useful to those who have had training in botany and chemistry, such as workers in experimental stations and laboratories. The terminology used is for the most part at a level above those who may wish to make direct application of the findings in field practices.

As the book states, hundreds of new compounds and suggested uses for them appear each year. One can but hope that the use of these compounds by the many investigators who are experimenting with them will not prove merely another "fad" which is all too common an occurrence when a new, or supposedly new, field is opened for investigation. At best the investigations concerning plant regulators must be but one of many subjects for investigation in any well-integrated program of research in the field of agriculture.

E. J. KRAUS
Corvallis, Oregon

ANTISEPTICS, DISINFECTANTS, FUNGICIDES AND CHEMICAL AND PHYSICAL STERILIZATION. George F. Reddish (editor). 841 pages, illustrations, tables, index. Lea & Febiger, Philadelphia, Pa. 1954. $15.

This very comprehensive book on antiseptics, disinfectants and fungicides is prepared primarily for physicians, bacteriologists, sanitarians and public health workers. The thirty contributors, half of whom are employed by commercial organizations, give the book an authoritative treatment not attainable by a single author. Although fessional users, it should become a standard the book is much too technical for non-proand highly useful reference book in its field.

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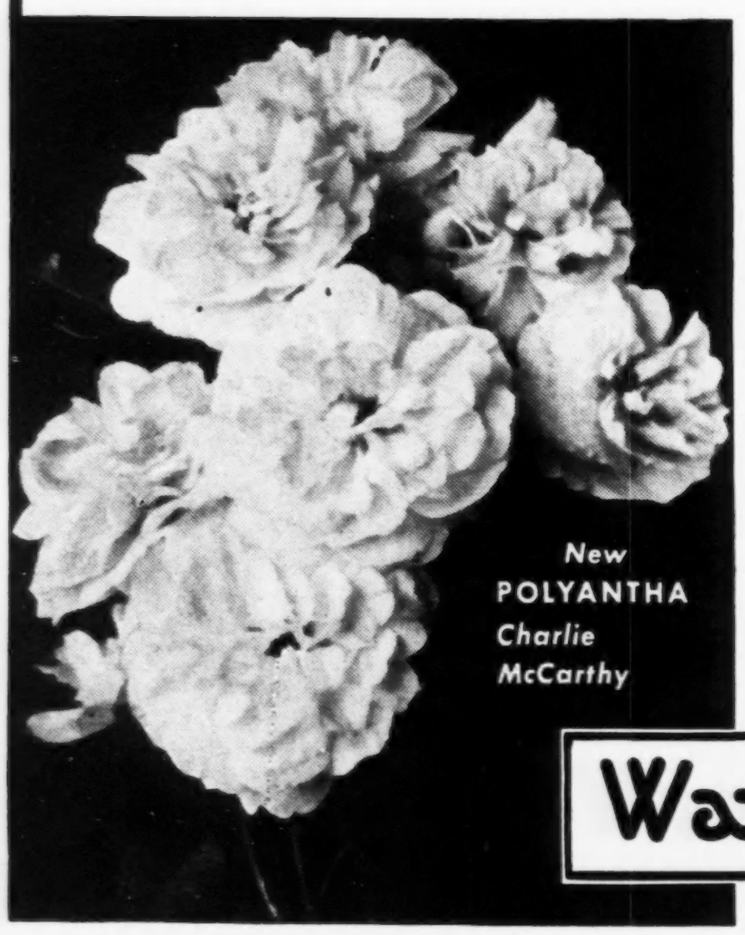

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